Aalto University
School of Business

DO INSTITUTIONAL SHAREHOLDERS IMPACT CORPORATE TAX AVOIDANCE?

Master's Thesis
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Abstract

In this thesis, I study the impact of institutional owners on corporate tax avoidance. Whereas the public discussion regarding the subject is often about tax avoidance scandals and the fear of institutional investors being bad owners – the business world sees tax avoidance as a natural part of the business. This study defines tax avoidance broadly as any activity that reduces explicit taxes. Furthermore, tax avoidance is divided into nonconforming and conforming tax avoidance. Nonconforming tax avoidance originates from the differences in book and tax rules. If no such differences existed, all tax avoidance would be conforming.

Findings of prior literature are partly contradictory. Those studies that find the relationship of institutional owners and corporate tax avoidance to be negative highlight the importance of long investment horizon and corporate governance. As for the opposite studies, they regard institutions' monitoring abilities and better knowledge of effective tax planning to play an important role. The contradictory results of prior research, the increasing share of the institutional owners, and the public concern of institutions being bad owners motivate this study.

The research data is collected from the Compustat and Thomson Reuters databases. After processing the data, the resulting sample consists of between 8,624 and 6,686 firm-year observations depending on the tax avoidance measure in the period 2011-2015.

As in the prior studies, also the results of this thesis are partly contradictory. I find weak evidence that the institutional ownership is negatively related to the corporate nonconforming tax avoidance. The results for conforming tax avoidance, on the other hand, slightly indicate that firms with more institutional shareholders engage in more conforming tax avoidance. Intriguing results come up related to the number of institutional investors. The results indicate that firms with less than forty different institutional blockholders engage in more nonconforming tax avoidance. It is consistent with my expectations that firms with fewer institutional owners are less exposed to the free-rider problem, and hence those firms benefit more from the institutions' monitoring abilities and better knowledge of effective tax planning.

Keywords tax avoidance, institutional shareholder

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Tiivistelmä

Käsittelen tässä gradussa sitä, miten institutionaalinen omistaja vaikuttaa yrityksen verojen välttelyyn. Julkinen keskustelu aiheesta liittyy usein verojen välttelyskandaaleihin ja pelkoon siitä, että institutionaalinen sijoittaja saattaa olla piittaamaton omistaja. Yritysmaailma sen sijaan näkee verojen välttelyn luonnollisena osana bisnestä. Tämä tutkimus määrittelee verojen välttelyn laajasti tarkoittamaan mitä tahansa toimintaa, joka vähentää yritykseen kohdistuvaa tuloveroa tai muuta suoraa veroa. Lisäksi verojen välttely jaetaan *nonconforming* (verojen välttely johtaa eroavuuteen kirjanpidollisessa ja verotuksellisessa tuloksessa) ja *conforming* verojen välttelyyn (verostrategian toteuttaminen vaikuttaa samalla tavalla kirjanpidolliseen ja verotukselliseen tulokseen).

Aiemman tutkimuksen tulokset ovat keskenään ristiriitaisia. Tutkimukset, joiden mukaan institutionaalisen sijoittajan ja yrityksen verojen maksun suhde on positiivinen, painottavat pitkän sijoitustähtäimen ja hyvän hallitustavan merkitystä. Vastakkaista tulosta näyttävät tutkimukset puolestaan näkevät instituutioiden monitorointikyvyt ja paremman verosuunnittelutietämyksen olevan merkittäviä selittäjiä. Tätä gradua motivoivat paitsi edellisten tutkimusten ristiriitaiset tulokset, myös institutionaalisten omistajien kasvava osuus ja yleinen epäilys institutionaalisen sijoittajan taipumuksesta olla huono omistaja.

Tutkimusdata kerätään Compustat- ja Thomson Reuters -tietokannoista. Datan prosessoinnin jälkeen jäljelle jää 6,686-8,624 yritys-vuosi havaintoa riippuen käytetystä verojen välttelyn mittarista. Otanta koskee vuosia 2011-2015.

Samoin kuin edeltävä tutkimus, myös tämän tutkimuksen tulokset ovat jossain määrin ristiriitaisia. Tutkimustulokset antavat heikon tuen sille, että institutionaalisen omistajan ja yrityksen *nonconforming*-verojen välttelyn suhde olisi negatiivinen. Vastaavasti, tulokset antavat pientä tukea sille, että yritykset, joissa on enemmän institutionaalisia sijoittajia, välttelevät enemmän veroja *conforming* -määritelmän mukaisesti. Mielenkiintoisia tuloksia saadaan liittyen yrityksen verojen välttelyn ja institutionaalisten sijoittajien määrään liittyen. Tulokset näyttävät, että yritykset, joissa on alle neljäkymmentä eri institutionaalista sijoittajaa, välttelevät enemmän veroja (nonconforming). Tulos on odotusten mukainen: yritykset, jotka ovat tarpeeksi harvan eri instituution omistuksessa, kärsivät vähemmän vapaamatkustajan ongelmasta. Tällaiset yritykset siis hyötyvät enemmän instituutioiden kyvystä monitoroida ja tehdä tehokasta verosuunnittelua.

Avainsanat verojen välttely, institutionaalinen osakkeenomistaja

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1 INTRODUCTION

This thesis studies how institutional investors affect corporate tax avoidance. The subject is rather new in the field of accounting research, which makes it a fairly topical issue. The introduction chapter will present the background, research method, main findings and key limitations for the thesis. Lastly, the structure of the thesis is more closely examined.

1.1 Background and motivation

The public discussion about tax payments of individuals and companies has been vivid in the recent years. Scandals seem to follow one another: the Panama Papers, Apple's tax avoidance activities in Europe, and tax avoidance of welfare and health companies in Finland, just to mention few.

Tax avoidance is not a new phenomenon, though. As long ago as thirty years back, evidence of corporate tax avoidance led to the Tax Reform Act of 1986 in the U.S. (McIntyre et al. 2014). What is new is that companies have become more and more multinational, which means that they have also become more heterogeneous. Multinational corporations cross jurisdictions, and by simply assuming that they pay taxes where they create profits may subsequently underestimate the real picture. Governments still want to be able to collect taxes where the real money is created, but in the modern, global and digital economy it seems to be an impossible task. In Finland, for instance, the government is looking for neutral corporate taxation that would not skew corporate decision making (VATT 2016). However, finding such a solution is not an easy task.

In contrast to the public discussion, the business world sees tax avoidance as a natural part of the business. The government takes more than one-third of the firm's pre-tax profits (Chen et al. 2010). Taken into consideration the significance of the tax cost to the firm and its shareholders, corporate tax planning could be naturally expected by shareholders. One euro saved in taxes is one euro more profits for shareholders. The idea of corporate tax savings being a transfer of value from the state to shareholders may be oversimplified but intuitively

understandable (see e.g. Rego 2003; Desai & Dharmapala 2009; Frank et al. 2009; McGuire et al. 2014).

Previous research has not been able to categorize firms based on their tax avoidance behavior. It is difficult to define the dividing line between, for instance, aggressive and non-aggressive, or responsible and irresponsible corporate tax avoidance. Instead, broad definitions for tax avoidance are used. This study follows Hanlon and Heitzman's (2010) definition of tax avoidance as any activity reducing explicit taxes. They model tax avoidance as a continuum of tax planning strategies where in one end is something very legal strategies like municipal bond investments. Closer to the other end are more aggressive or suspicious strategies like tax sheltering. Tax planning is anywhere along the continuum, meaning any activity reducing corporate tax payments. So, instead of drawing lines between responsible and irresponsible corporate tax payers, firms could be placed along the continuum depending on their tax payments. It is in the eye of the beholder where the line is drawn.

The prior research has mainly concentrated on nonconforming tax avoidance, which refers to cases in which tax avoidance transactions are accounted differently for book and tax purposes. Conforming tax avoidance, on the other hand, means that financial accounting income is reduced when a tax strategy is employed. (Hanlon and Heitzman 2010)

Tax avoidance research has sought to identify firm-level characteristics that affect corporate tax avoidance. Desai and Dharmapala (2008) argue that the nature of ownership patterns may have implications for the workings of tax policy, and Shackelford and Shevlin (2001) call for more research on the subject.

The earliest research about how ownership affects corporate tax avoidance compared public and private ownerships (e.g. Beatty and Harris 1998; Mikhail 1999; Mills & Newberry 2001). More recently, the research has concentrated on the impact of family-ownership (Chen et al. 2010), hedge fund activists (Cheng et a. 2012), dual-class stock (McGuire et al. 2014) and the separation of ownership and control (Badertscher et al. 2013) on corporate tax practices.

The most recent research branch has focused on the influence of institutional ownership on corporate tax avoidance. The results have been partly contradictory. Khurana and Moser (2013) and Hasan et al. (2016) find that institutional ownership is negatively associated with tax

avoidance. They highlight the importance of investment horizon and corporate governance as explanations for the results. Instead, Chen et al. (2015), Khan et al. (2016), and Bird and Karolyi (2017) find a positive association between institutional investors and corporate tax avoidance. They emphasize the facts that institutions bring tax planning knowledge and monitoring abilities to their target firms, making the tax planning of the firms more effective. However, the latter mentioned three research papers have some contradictory results with each other regarding the role of corporate governance and the use of tax shelters on tax avoidance practices.

The public discussion often highlights the fear that institutional investors may weaken the governance and performance of their target firms:

"*There was not much sign of scrutiny or wealth creation in fiascos like Enron and Lehman Brothers. Governance has been weakened by the rise of passive index funds, which means that many firms' largest shareholders are software programs.*" (The Economist 2015)

Since institutional investors own now around 80 percent of all stocks in S&P500 (Elhauge 2016), the concern of institutional shareholders being bad owners should be taken seriously. However, the research results suggest that the concern is overstated: institutional investors seem to positively influence the governance of the firms, and they are good at monitoring, which leads to improved performance of the firms (e.g. Brav et al. 2008, Appel et al. 2016). Still it is true that institutions may value short-term over long-term, which may lead to higher tax avoidance, or that firms with multiple institutional blockholders may have a free-rider problem, which means that each investor individually has insufficient incentives to bear the cost of monitoring (Grossman and Hart 1980), which in turn may lead to lower tax avoidance.

All the three aspects – (1) the contradictory results of prior corporate tax avoidance and institutional investor research, (2) the increasing share of institutional owners, and (3) the strong public concern of institutional investors being bad owners - suggest that more research is needed. This study contributes to the emerging literature on the impact of ownership on corporate tax practices by studying the role of institutional owners.

1.2 Research problem and method

Based on the theoretical framework, three main hypotheses were developed.

H1a: Firms with more institutional investors exhibit higher levels of nonconforming tax avoidance.

H1b: Firms with more institutional investors exhibit lower levels of nonconforming tax avoidance.

H2a: Firms with more institutional investors exhibit higher levels of conforming tax avoidance.

H2b: Firms with more institutional investors exhibit lower levels of conforming tax avoidance.

H3: Firms with multiple institutional shareholders exhibit lower levels of tax avoidance.

To examine the hypotheses - the tax avoidance of the firms owned by institutional investors - I rely on multiple measures of tax avoidance drawn from prior literature. Specifically, I use two effective tax rate measures, *CASH_ETR* and *GAAP_ETR*, and a book-tax difference measure, *BTD*, to capture nonconforming tax avoidance, and one measure for conforming tax avoidance. Firms that engage in more tax avoidance have lower effective tax rates, and higher book-tax differences and a higher value for the conforming tax avoidance measure. I rely on prior research also in the selection of control variables. Furthermore, I include two test variables related to the role institutional investors: a percentage of the firm's outstanding shares owned by institutional investors, and a dummy variable for the number of institutional blockholders. I estimate the resulting model using ordinary least squares regression.

I use a research sample of between 8,624 and 6,686 firm-year observations depending on the measure of tax avoidance in the period 2011-2015. I gather the data from Compustat and Thomson Reuters databases, so the data concerns U.S. firms.

1.3 Main results

The first results show how the percentage of the firm's stock owned by institutions is related to the firm's tax avoidance. Nonconforming tax avoidance is tested by two effective tax rate measures, *CASH_ETR* and *GAAP_ETR*, and a book tax difference, *BTD*. Conforming tax avoidance is tested by only one measure, *CONFORMING_TAX*.

My findings related to the corporate nonconforming tax avoidance are mixed: two of the measures, *GAAP_ETR* and *BTD*, show decreased tax avoidance, whereas *CASH_ETR* gives contradictory results. That is, *GAAP_ETR* and *BTD* show that when the part of the firm's shares owned by institutions increases, the firm engages in less tax avoidance, whereas results of the *CASH_ETR* indicate the opposite. A potential explanation for the contradictory results is that the *CASH_ETR* differs from the two others in three important ways: it does not reflect accounting accruals, it is not straightly computable by jurisdictions, and it is the most volatile of the three measures. The reasoning noticed, I interpret the results to give a slight support for the hypothesis 1b. However, this interpretation should be considered carefully, and more research is needed to truly prove it.

Moreover, the results indicate that profitable, growing and leveraged firms tend to engage in more nonconforming tax avoidance. Also, firms that have more property, plant and equipment to assets, firms with loss carryforwards available in the beginning of the year, and firms that have more advertisement and R&D expenditure seem to be more aggressive in nonconforming tax avoidance.

My findings related to the corporate conforming tax avoidance indicate that institutional shareholders are slightly associated with corporate conforming tax avoidance.

Most of the control variables indicate that firms usually engage adversely in nonconforming and conforming tax avoidance. Only profitable firms and firms with loss carryforwards available in the beginning of the year exhibit higher levels of both nonconforming and conforming tax avoidance.

My last finding differs from the above in that the effect of institutional owners on the firm's tax avoidance is measured by a dummy variable, *InstOwn_dum*, which is set to one if the firm's stock is owned by less than forty different institutional owners. The results suggest that firms with less than forty different institutional shareholders exhibit higher levels of nonconforming tax avoidance. It is consistent with my expectations that firms with fewer blockholders are less exposed to the free-rider problem, and hence those firms benefit more from the knowledgeable institutional shareholders and their monitoring of the firms' managers.

1.4 Key limitations

I identify three key limitations which can possibly skew the results or limit the generalization of the results. First of all, endogeneity of institutional ownership could be a problem of this thesis as it may have been of some prior papers as well. For instance, the paper of Khurana and Moser (2013), was criticized by Khan et al. (2016) who argue that Khurana and Moser failed to control the endogeneity of institutional ownership. Since my empirical setting is quite close to that of Khurana and Moser, the same concerns could be addressed to my empirical setting.

Second, I use comparatively short sample period of five years. This is to keep the thesis to its scope. Also, my choice to use the period 2011-2015 may color the results since it is a period straight after the financial crisis that started in 2007-2008. However, I try to interpret the results accordingly.

Third, because I use ETRs, my research sample consists only of firms with positive pretax income. This creates a potential sample selection bias because the sample excludes loss firm-year observations. However, all studies using one-year ETR as a proxy for tax avoidance are subject to this limitation.

1.5 Structure of the thesis

The remainder of the thesis proceeds as follows. First of all, I will focus on the literature review in chapters two and three. The chapters introduce the core concepts, definitions, and main previous research papers related to my study. The chapters create the theoretical framework which helps the reader to understand the empirical part, especially the result interpretation and analysis. The chapter two concentrates on the theoretical framework of tax avoidance, whereas the chapter three focuses on institutional investor as an owner. Based on the literature covered in the chapters two and three, hypotheses are developed in chapter four as if proposed explanations for the corporate tax avoidance phenomenon.

Chapters five and six compose the empirical part of the thesis. In the chapter five I present my research sample, and the regression model I use to examine institutional ownership in relation to corporate tax avoidance. The dependent, test and control variables used in the regression are exhaustively presented. The chapter six concentrates first on describing my sample: statistics

of the variables, industry statistics of the sample, and correlations of the coefficients are presented. After that, I present and discuss my regression results, and introduce two additional tests I conducted to assess the consistency and robustness of the results.

Chapter seven concludes the thesis; in this chapter I try to go deeper in the analysis compared to the empirical part's analysis, and put the results into a wider concept. Conclusions include a summary of the findings, contributions to the existing literature, managerial implications, and, finally, few propositions of further research topics.

2 TAX AVOIDANCE

In this chapter, tax avoidance is defined. Then, tax avoidance is divided into nonconforming and conforming tax avoidance, and the both concepts are widely examined. After that, previous research on the determinants of corporate tax avoidance are presented with the help of three subcategories: traditional determinants, agency framework and ownership patterns. These subcategories should include all the main determinants of corporate tax avoidance that prior research has recognized. Moreover, the studies related to the impact of institutional ownership on corporate tax avoidance are more closely inspected.

2.1 Definition of tax avoidance

The chapter introduces the definition of corporate tax avoidance. In the following chapters, when tax avoidance is mentioned, it refers to the concept defined in this chapter 2.1.

Initially, taxes were created to offer financial support for citizens' needs. They are also a fundamental vehicle to redistribute wealth and promote equality between citizens. (David & Abreu 2008) Tax laws are still designed to redistribute public sector's financing fairly (Knuutinen 2013). It is often regarded morally wrong that and individual or a firm receives benefits of the state without paying taxes (David & Abreu 2008).

However, taxpayers often try to minimize their tax payments to the state (e.g. Desai & Dharmapala 2006). The challenge for the research is that there are no universally accepted definitions for tax planning, tax avoidance, tax aggressiveness, or tax evasion. The different terms include both acceptable and unacceptable tax planning activities in the viewpoint of the government (Knuutinen 2013). Most of the sheltering activities, for instance, include many complicated steps that may individually examined seem perfectly legal, but the overall result might be egregious (Weisbach 2003).

The absence of universally accepted terms has led to a situation where researchers use very broad terms for tax avoidance and its related terms. Dyreng et al. (2008, p. 62), for instance, argue that "*there are many areas in which the law is unclear, particularly for complex transactions, and firms may take positions on their returns in which the ultimate tax outcome is*

uncertain", and based on the argument they define tax avoidance as "*anything that reduces the firm's cash effective tax rate*".

This study follows Hanlon and Heitzman's (2010) broad definition of tax avoidance as an activity of reducing explicit taxes. The definition includes tax-favored real activities, tax-reduction-aimed avoidance activities, as well as tax benefits from lobbying activities. Figure 1 models the definition of Hanlon and Heizman where tax avoidance is a continuum of tax planning strategies. Perfectly legal strategies like municipal bond investments are in one end, and more aggressive strategies like sheltering are closer to the other end. As Hanlon and Heizman point out, different people would have different opinions of where the line of aggressive tax planning should be drawn.

FIGURE 1. Tax avoidance continuum.

Developed based on the study of Hanlon and Heitzman (2010)

Tax avoidance can happen in only one year or over many years. The study of Dyreng et al. (2008) suggests that many firms are able to avoid taxes over long periods of time. In their research sample one-fourth of firms are able to maintain long-run cash effective tax rate below 20 percent. This study will not try to distinguish short-term tax avoidance from long-term tax avoidance.

2.2 Practices of tax avoidance

In addition to defining the term *tax avoidance*, it is also important to define what such an activity particularly includes. By shortly going through and defining some of the typical strategies the study makes sure that the reader has clear understanding on the issues, and that the

understanding is not barely based on the public discussion. In this study, corporate tax avoidance is divided into *nonconforming* and *conforming* tax avoidance.

2.2.1 Nonconforming tax avoidance

This chapter defines what nonconforming tax avoidance means. Because the concept is rather difficult, it also makes the chapter relatively long. First, I go through the factors that make the book income differ from taxable income. Then, I shortly talk about *aggressive reporting*, which is a vague phenomenon as it lacks theoretical evidence. Finally, few interesting findings of prior research about firms' nonconforming tax avoidance practices are presented.

Nonconforming tax avoidance refers to tax avoidance transactions that are accounted differently for book and tax purposes (Hanlon and Heitzman 2010). In other words, when a nonconforming tax strategy is employed, book income increases more than taxable income.

Book vs tax rules

In their broad review of accounting for income taxes, Graham et al. (2012) identify two sources for differences in book and tax income: temporary and permanent differences. Temporary differences occur when both financial and tax accounting recognize the same amount of income but over different time periods. A typical example of temporary differences is depreciations which are usually more accelerated for tax purposes. (U.S. Department of the Treasury 1999) Another example of temporary differences is valuation allowance. It is important to note that valuation allowance results in an additional difference between taxable income and after-tax book income, whereas other temporary differences widen the gap between taxable income and pre-tax book income (Hanlon and Heitzman 2010). Uncertain tax contingency works roughly the same way as valuation allowance, thus resulting in an additional difference between taxable income and after-tax book income. Hanlon and Heitzman (2010) point out that valuation allowance and uncertain tax contingency reserves are not tax strategies for companies. For instance, if a company has deferred tax assets (DTA) on the balance sheet from loss carryforwards, and the company notices that the probability of full realization of the tax benefits is very low in the foreseeable future, the company must adjust the DTA and thus lower its after-tax book income.

The total amount of temporary differences can be seen in the balance sheet as the net of deferred tax assets (DTA) and deferred tax liabilities (DTL). Poterba et al. (2011) find that more companies have net DTLs than they have net DTAs.

Permanent differences occur when income or expense is recognized only under one system and never under the other. Interests on municipal bonds, for instance, generate permanent difference since they are recognized only under financial accounting rules. (U.S. Department of the Treasury 1999) Permanent differences cause effective tax rates to differ from the statutory tax rates. However, permanent book-tax differences are not the only source that affect the reconciliation of the ETRs and the statutory rates. (Graham et al. 2012) Raedy et al. (2011) find that the largest reconciling items are foreign and state tax rates. It is notable that such differences are not caused by the difference of GAAP and tax rules (Graham et al. 2012).

The reporting of U.S. taxes of foreign profits creates yet additional differences in book and tax reporting. The U.S. law allows taxes on the income of foreign subsidiaries to be deferred until repatriated to the parent as dividends. The income can though avoid current U.S. taxes, perhaps indefinitely. The law allows managers to choose between temporary and permanent treatment if the U.S. tax rate exceeds the local rate for the subsidiary. If a firm chooses the temporary treatment, it estimates the U.S. tax that will be required at repatriation and accrues that income tax expense. If the permanent treatment is chosen, the firm does not defer any expense until it decides to repatriate the funds. (Graham et al. 2012)

Finally, Hanlon and Heitzman (2010) also mention tax credits, which reduce the taxes owed, but do not affect taxable or pre-tax book income, and consolidation rules for book and tax purposes of which differ, resulting in different entities being consolidated for the group book and group tax reports. These items, however, are not relevant in the scope of this thesis.

Aggressive reporting

Many seem to believe that aggressive reporting for book or tax purposes may additionally widen the gap between book and tax income yet the argument is hard to verify. Hanlon and Heitzman (2010) define aggressive tax reporting as a situation in which a manager has the choice to either report a revenue raise only for financial accounting purposes or for both tax and financial accounting purposes and he chooses to report it only for financial accounting purposes. The

term is close to the legal vagueness situation described by Palsternak and Rico (2008). They argue that sometimes taxpayers have the ability to manipulate legal terms. The chance arises when one legal term overlaps with another or there is a partial synonymy, and the activity is covered by the two terms at once, then the taxpayers have the legitimacy to use the term that reduces their tax burden. However, it is difficult to find evidence of such an activity (Hanlon and Heitzman 2010).

Some evidence of nonconforming tax avoidance activities

U.S. Department of the Treasury (1999) has defined tax shelters as arrangements or transactions that generate tax losses without incurring economic losses. The definition seems to be closely related to the definition for nonconforming tax avoidance, which was earlier discussed in this thesis. However, even that no universal definition for a tax shelter exists, the term is widely regarded as a form of a more aggressive tax avoidance practices. Wilson (2009) documents evidence that large book-tax differences signal tax sheltering, and that tax sheltering is associated with firm size. Lisowsky (2010) finds a positive relationship between tax shelters and subsidiaries located in tax havens, foreign-source income, inconsistent book-tax treatment, litigation losses, use of promoters, profitability, and size.

Bartelsman and Beetsma (2003) study income shifting to tax havens. They identify two major ways of multinationals to shift income to low-tax countries: financing structure and transfer pricing. Financing structure means in its most simple form multinationals' tendency to finance affiliates in high-tax countries by debt. Transfer pricing, on the other hand, is about mispricing intra-firm international trade by overpricing (underpricing) of goods and services sold to affiliates in high-tax (low-tax) countries. (Bartelsman and Beetsma 2003)

2.2.2 Conforming tax avoidance

Above described tax avoidance activities that create differences in book and tax income are also called as nonconforming tax avoidance. In addition to that, conforming tax avoidance also occurs.

Conforming tax avoidance means that financial accounting income is reduced when a tax strategy is employed. Hanlon and Heitzman (2010) call for better measures to capture

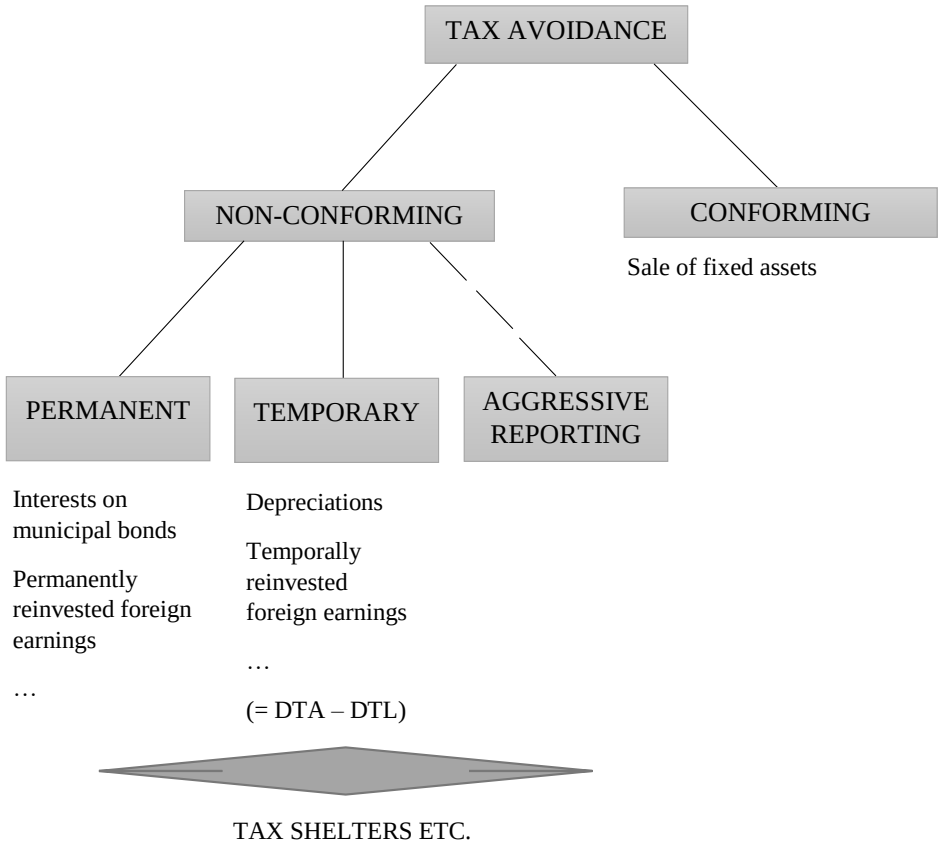
conforming tax avoidance, and Badertscher et al. (2016) are the first to address it, at least to my knowledge. They develop a new measure of conforming tax avoidance which is based on the ratio of cash taxes paid to lagged total assets, and they regress the ratio to extract the effect of nonconforming tax avoidance. They find evidence that capital market pressure influences public firms' engagement in conforming tax avoidance. Conforming tax avoidance of public firms is especially interesting as it tells in which direction the tradeoff - reduced income tax liabilities or lower reported financial income - leans. Conforming tax avoidance may refer, for instance, to sale of fixed assets. (Badertscher et al. 2016)

If the calculation of book and taxable income were similar, nonconforming tax avoidance would not exist, but all tax avoidance would be conforming. Hanlon et al. (2005) study what would happen if the two measures of income were conformed to one measure. They report that the information loss would be as high as 50 percent if the book income was conformed to the tax rules.

2.2.3 Summary of the practices of tax avoidance

The following Figure 2 summarizes the chapter 2.2. The mind map is based on the above discussion, and more specifically, merely on the studies of Graham et al. (2012), and Hanlon and Heitzman (2010). However, all the studies mentioned in the chapter 2.2 may have had some impact on the final version of the figure, but the extent of each study's impact is difficult to specify. The aim of the figure is not only to summarize the chapter but also to give the reader a tool which can be used in the empirical part's chapters. The terms presented in this chapter, such as "permanent differences" and "conforming tax avoidance", will be mentioned quite often later on this thesis, and that is where the mind map can be helpful.

FIGURE 2. Different types of tax avoidance



Developed based mainly on Graham et al. (2012) and Hanlon and Heitzman (2010)

2.3 Determinants of tax avoidance

This subchapter provides a review of the determinants of tax avoidance. First, I give an overview of basic, traditional determinants of tax avoidance. Then, agency framework is more closely examined because prior research suggests that agency frictions could be one single wider concept to explain corporate tax avoidance behavior. Lastly, as ownership patterns can strongly affect corporate tax avoidance, the topic and its related studies are inspected. Specific emphasis is put on the studies that relate to institutional ownership.

2.3.1 Overview of basic determinants

An individual's tax avoidance is affected by both external (e.g. probability of detection and punishment) and internal (e.g. tax morality, civic duty) motivation (Frey 1997). Hanlon and Heitzman (2010) and Luttmer and Singhal (2014) argue that many of the determinants of individual tax compliance apply to the corporate taxpayer as well. For instance, Hasan et al. (2016) document evidence that firms with higher civic norms are less likely to engage in tax avoidance activities, which could be comparable to an individual's tax morality case.

Prior research has find that corporate tax avoidance is associated with certain firm-level characteristics including profitability, scale of international operations, intangible assets, research and development expenditures, leverage, financial reporting aggressiveness, and equity risk incentives (e.g. Gupta and Newberry 1997; Rego 2003; Graham and Tucker 2006, Frank et al. 2009; Wilson 2009; Rego and Wilson 2012). Also, prior research suggests that top executives have a significant impact on their firms' tax avoidance (Dyreng et al. 2010).

The theoretical evidence for the relationship between tax avoidance and firm value is mixed. The traditional view suggests that firm value increases with tax avoidance, transferring wealth from the government to shareholders (Khurana and Moser 2013). Rego (2003) finds negative relationship between pre-tax income and effective tax rate (ETR). Consistently, Frank et al. (2009) find a strong relation between aggressive tax and financial reporting. However, Hanlon (2005) argues that investors view large positive book-tax differences as an indicator of low-quality of earnings. Desai and Dharmapala (2009) do not find an average association between tax avoidance and firm value.

2.3.2 Agency framework

Dyreng et al. (2010) note that evidence on the determinants of tax avoidance remains still limited despite widespread interest in the area, and Hanlon and Heitzman (2010) suggest that agency frictions could be an explanation.

The agency problem - managers appointed by shareholders pursuing their own interests – in the tax avoidance context suggests that the link between corporate governance and taxation should be more widely understood. In contrast to the traditional view, the agency view sees tax

avoidance as not a simple transfer of profits from the government to shareholders; rather, managers may capture a share of the benefits of tax avoidance (Desai and Dharmapala 2008). Two competing agency theories try to explain why companies do not engage in tax avoidance in an optimal level – giving also some insight into the ambiguous relationship between tax avoidance and firm value.

The first view is suggested by Desai and Dharmapala (2006). They argue that tax avoidance may create a shield for managerial opportunism. Complex tax avoidance strategies facilitate transactions with related parties, making it possible for managers to divert rents from the shareholders. The corporate structure becomes so opaque that it is impossible for shareholders to evaluate managers' performance. Desai and Dharmapala further assume that incentive alignment may have two ambiguous effect on the extent to which managers undertake tax avoidance activities: (1) managers have better motivation to increase after-tax firm value, meaning increased tax avoidance, but (2) the incentives may dissuade managers from acts of opportunism, meaning decreased tax avoidance. Hence, the theory suggests the first effect to work for better-governed firms, and the latter to work for poorly-governed firms. Consistent with this view, Desai and Dharmapala (2009) find that the impact of tax avoidance on firm value is significantly stronger at better-governed firms. Also, Hanlon and Slemrod (2009) study market reactions to news about tax sheltering activities by firms. They find overall a small negative reaction to news, but a more positive reaction for better-governed firms.

The second and competing view is suggested by Armstrong et al. (2015). They argue that tax avoidance is one of many risky investment opportunities available to managers, and agency problems can lead managers to select a level of tax avoidance that is not optimal for shareholders. More knowledgeable boards understand the net benefits of tax avoidance, and encourage more tax planning at lower levels of tax avoidance, leading to an improved cash flow with little accompanying risk. Conversely, when the level of tax planning is high, more knowledgeable boards discourage additional tax avoidance, because the costs (e.g. regulatory or reputational) are likely to outweight the benefits. In other words, Armstrong et al. suggest that tax avoidance and managerial rent extraction are not complementary activities, questioning the theory of Desai and Dharmapala (2006).

Overall, the results concerning the relationships among corporate governance, incentive alignment, and tax avoidance are mixed. For instance, Rego and Wilson (2012) find that equity risk incentives are a significant determinant of corporate tax aggressiveness. However, they fail to find evidence of a relationship between other governance mechanisms and tax avoidance.

2.3.3 Ownership patterns

Ownership structure is an important factor that can affect corporate tax avoidance (Hanlon and Heitzman 2010). The earliest research on the subject compared the impact of private ownership to public ownership (e.g. Beatty and Harris 1998; Mikhail 1999; Mills and Newberry 2001). The results were mixed. Mills and Newberry (2001) find that public firms report larger book-tax differences compared to private firms. They explain the difference by the private firms' fewer incentives to report nonconforming book income. Mikhail (1999) has a contradictory view; he finds that public companies do not seem to manage taxes, whereas private companies are aggressive in the field of tax planning. His explanation is based on the agency theory, indicating that incentive compensation contracts in the public companies reduce tax avoidance.

The mixed results regarding the impact of private versus public ownership on corporate tax avoidance indicate that more detailed research is needed. This was also the concern of Shackelford and Shevlin (2001) and Hanlon and Heitzman (2010) who both called for more research on the subject to better understand the organizational factors that affect corporate tax avoidance.

The research picked up in the 2010s. Chen et al. (2010) compare family firms and their non-family counterparts in relation to tax aggressiveness. The research composition is interesting because both the costs (share price discount from non-family shareholders, penalties from tax authorities, damage on family reputation) and benefits (family owners have higher holdings and thus benefit more from tax savings or concealed rent extraction) of tax avoidance appear to be greater for family firms compared to their counterparts. The results show that family firms exhibit lower tax aggressiveness than their counterparts, highlighting the importance of nontax costs. However, Hanlon and Heitzman (2010) critique the result interpretation of Chen et al. (2010), arguing that the research does not take into account the possibility of conforming tax

avoidance by family firms. Also, Armstrong et al. (2015) express their concern by questioning the interpretation of low levels of tax avoidance as a symptom of good governance.

Cheng et al. (2012) find that businesses targeted by head fund activists exhibit higher level of tax avoidance after a hedge fund intervention. Interestingly, the research shows that tax avoidance in the target firms is associated with the hedge funds' past success in implementing tax changes, explaining the increase in the tax avoidance level at least partly. This is consistent with the classic agency theory, which predicts that managers must have incentives to pursue all opportunities to maximize firm value, and if a manager is not maximizing value, the investors can attempt to change specific policies (Jensen and Meckling 1976).

Badertscher et al. (2013) consider the influence of management ownership relative to private equity ownership in private firms on tax avoidance. Their findings indicate that greater concentration of ownership and control leads to less tax avoidance because owner-managers are risk-averse and private equity ownership have lower marginal cost of tax avoidance.

McGuire et al. (2014) study the specific situation of dual-class stocks. They find that such firms engage in less tax avoidance activities, reflecting two probable explanations: (1) tax avoidance is costly to managers and in the case of dual-class stocks, shareholders have limited ability to compel managers to such an activity, and (2) as the gap between voting rights and cash flow rights is wide, shareholder anticipation of the rent extraction will lead easily to a share price discount, making managers more careful to take part in tax avoidance.

Institutional ownership and corporate tax avoidance

Recently, three studies have examined the impact of institutional ownership on corporate tax practices (Chen et al. 2015; Khan et al. 2016; Bird and Karolyi 2017), and they all find a significant positive relationship between institutional investors and corporate tax avoidance for all tax avoidance measures they test. Khan et al. (2016) and Bird and Karolyi (2017) report also a significant use of tax shelters. However, Chen et al. (2015) do not find any difference in the use of tax shelters. Additionally, Khan et al. (2016) document benefits in the form of higher net income margins and likelihood of meeting or beating analysts' forecasts. Results concerning the effect of corporate governance are mixed. Chen et al. (2015) do not find relation between

corporate governance and tax avoidance, whereas Bird and Karolyi (2017) find some evidence of such a relation.

These results are partly contradictory to the studies of Khurana and Moser (2013) and Hasan et al. (2016) who find an overall negative relation between institutional investors and corporate tax avoidance. Both studies highlight the importance of long-term investment horizon and corporate governance quality as the drivers of the results. The results of Khurana and Moser are especially strong for firms with poor government. Khan et al. (2016) critique the study of Khurana and Moser arguing that they (1) fail to control endogeneity of institutional ownership and (2) they do not use powerful enough tests in capturing the relationship between institutional shareholders and corporate tax avoidance.

The following Table 1 summarizes some of the most important prior research papers that are related to tax avoidance. The research papers on the list have all been referenced earlier in this thesis but in different chapters.

TABLE 1. Overview of prior tax avoidance related research

Authors	Data	Tax avoidance measures*	Key findings
Armstrong, Blouin, Jagolinzer and Larcker (2015)	Compustat data; 4,128 observations; 2007-2011	UTB, GAAP_ETR3	Risk-taking incentives positively related to tax avoidance. Better-governed firms exhibit a positive relation with tax avoidance in the left tail of the tax avoidance distribution
Badertscher, Katz and Rego (2013)	2,970 observations; 1980-2010	GAAP_ETR3 and CASH_ETR3, DTAX (Frank et al. 2009), SHELTER	Less concentrated ownership and control related to greater tax avoidance
Bird and Karolyi (2017)	Compustat, CRSP and Spectrum 13F data; 15,214 observations; 1996-2006	CASH_ETR, GAAP_ETR, BTD (Rego and Wilson 2012), SHELTER, TaxHaven_dum	Firms with institutional shareholders engage more in tax avoidance: lower CASH_ETR and GAAP_ETR, lower BTD, more sheltering. The effect is greater for firms with poor governance
Chen, Chen, Cheng and Shevlin (2010)	Compustat, ExecuComp and IRRC data; 3,865 observations; 1996-2000	CASH_ETR, GAAP_ETR, BTDs (Manzon&Plesko 2002; Desai and Dharmapala 2006)	Family firms engage less in tax avoidance than their counterparts
Chen, Li and Shevlin (2015)	Russel, Compustat and Thomson data; 1996-2006	GAAP_ETR, CASH_ETR, BTD, SHELTER	Firms with quasi-indexer (passive) institutional owners engage more in tax avoidance: lower CASH_ETR and GAAP_ETR, lower BTD, no difference in sheltering. Results unaffected by governance.
Cheng, Huang, Li and Stanfield (2012)	Compustat, Thomson 13F and EDGAR 13D data; 2,981 observations; 1994-2008	GAAP ETR, CASH_ETR, BTD (Manzon&Plesko 2002)	Hedge funds' target firms exhibit higher level of tax avoidance following the funds' intervention
Desai and Dharmapala (2006)	Compustat and Execucomp data; >900 firms; 1993-2001	BTD (Manzon&Plesko 2002), SHELTER	High-powered incentives relate to low-level of tax avoidance, but the relation holds only with weaker corporate governance
Dyreng, Hanlon and Maydew (2008)	Compustat data; 2,077 firms; 1995-2004	CASH_ETR1, CASH_ETR5, CASH_ETR10	Firms can have low CASH_ETR for as long as 10 years; 1 year CASH_ETR not suggestive of long-run tax avoidance

Dyreng, Hanlon and Maydew (2010)	EcecuComp and Compustat data; 12,958 observations; 1992-2006	CASH_ETR, GAAP_ETR	Top executives have a significant impact on their firms' tax avoidance
Khan, Srinivasan and Than (2016)	Russel, Compustat and Thomson data; 1988-2006	CASH_ETR, GAAP_ETR, BTDs (Manzon&Plesko 2002; Desai and Dharmapala 2006), SHELTER	Firms with institutional shareholders engage more in tax avoidance: lower CASH_ETR and GAAP_ETR, lower BTD, more sheltering
Khurana and Moser (2013)	Compustat and Thomson 13F data; 17,997 observations; 1996-2008	BTD (Rego and Wilson 2012), PERM_BTD (Frank et al. 2009), CASH_ETR, SHELTER	Firms with long-term institutional shareholders engage less in tax avoidance: higher CASH_ETR and GAAP_ETR, lower BTD, less sheltering. Effect of governance.
Lisowsky (2010)	Compustat and OTSA data; 9,223 observations	SHELTER	Tax shelters related to subsidiaries in tax havens, foreign source income, inconsistent book-tax treatment, litigation losses, use of external service providers, profitability, and size
McGuire, Wang and Wilson (2014)	Compustat data; 27,591 observations; 1995-2002	CASH_ETR, GAAP_ETR	Tax avoidance costly to managers; managers careful due to possible share price discount; dual-class firms engage less in tax planning
Rego and Wilson (2012)	EcecuComp and Compustat data; 18,240 observations; 2007-2009	CASH_ETR5, DTAX, SHELTER, UTB	Equity risk incentives are a significant determinant of corporate tax avoidance
Wilson (2009)	59 firms; 1975-2007	BTD (permanent, temporary, adjusted), SHELTER	Large book-tax differences signal tax sheltering; tax sheltering associated with firm size; tax shelters with strong corporate governance associated with abnormal returns

* Tax avoidance measures:
BTD = book-tax difference
CASH ETR = cash effective tax rate, numbers refer to if the measure is calculated over several years
DTAX = discretionary permanent book-tax difference
GAAP ETR =GAAP effective tax rate, numbers refer to if the measure is calculated over several years
SHELTER = measure of the use of tax shelters (Wilson 2009)
UTB = firm's uncertain tax benefit

3 INSTITUTION AS AN OWNER

In the chapter three, previous research about institutional ownership is introduced. The chapter does not focus on tax avoidance studies, as they were introduced in the prior chapter, but it examines some important, general research papers about institutional investors. That way the reader's understanding about institution as an investor and owner increases. For instance, if we know the ways by which the institutions affect their target firms, the same ways may be accurate when it comes to affecting tax avoidance of the firms. The ultimate target of this chapter is to provide better understanding on how institutional owners may impact their target firms' tax avoidance.

3.1 Institutional vs. individual owner

In this thesis, shareholders, investors and owners refer to the same – to those entities that own shares of the companies. Moreover, from the mass of investors, institutions are separated into closer inspection. Whereas individual is a physical person, institution is an organization that invests on behalf of its members. In order to understand the research choice of the thesis – the choice to focus on institutions as a group investors – and what the choice means, institutional investor characters are compared to those of individuals.

The percentage of public equity held by physical persons has declined over the years. In the mid-1960s, physical persons hold 84% of all publicly listed stock in the U.S. In 2011, the corresponding percentage was 40% (Çelik and Isaksson 2013). Of all stocks in S&P500, institutional investors own now around 80% (Elhauge 2016).

Prior research has recognized several ways by which institutions differ from individuals as investors. First, institutions are widely acknowledged to be better at monitoring and gathering information than individuals. Monitoring can mean gathering information, analyzing information, acting based on the information, or influencing others – either managers of other shareholders (Fich et al. 2015). Institutions invest larger amounts in each stock and, therefore, they have incentives to devote resources to monitoring (Grossman and Hart 1980). Second, taxes

and regulations distinguish institutional investors from individuals. Some institutions, like pension funds, do not pay taxes on their capital gains or dividends. Third, institutions are fiduciaries – they invest on behalf of others and, therefore, are subject to agency conflicts.

Some prior research articles have stated that institutional investors prefer short-term earnings over long-term earnings, called also as myopic behavior (Porter 1992, Lang and McNichols 1997). Two characteristics of the U.S. markets are often blamed for this: U.S. accounting standards which require immediate expensing of some long-term investment costs (e.g. R&D expenditure), and short-term performance pressure combined with the fiduciary role of institutional investors (Bushee 2001).

To institutions, selling and buying processes are very similar. Institutions routinely sell short, and they thus have identical sets of purchases and sales. Institutional investors also devote time to searching when they buy and sell, and they use computers to narrow the search. As for individuals, selling and buying processes differ: most individuals do not sell short, and they less often devote much time for searching when they buy or sell. When it comes to selling of the shares, rational investors sell their past losers. However, not all individuals are rationale sellers – behavioral investors sell their past winners as to postpone the regret of realizing the losses. (Barber and Odean 2008)

3.2 Active and passive institutional investors

Sometimes institutions are suspected to be bad owners. The reason for the fear may be related to the above discussed fiduciary role of institutional investors or the possible myopic behavior of the institutional shareholders. However, when such a concern arises in the public discussion, *passive* institutional investors are more often blamed for it. That is why I will briefly discuss about the difference between passive and active investors with the help of few important research papers.

Recent research often divides institutional investors into active and passive investors. Active investors refer to activists that accumulate shares or active fund managers that sell shares in a target company with the purpose of influencing management. Many institutions are instead passive - their objective could be to deliver the returns of a market index. Such passive investors

do not actively buy or sell shares. (Appel et al. 2016) The basic assumption behind a passive investment strategy is that the market returns are positive given enough time. Passive investors are characterized by holding diversified portfolios with low turnover and long investment horizon. (Bushee and Noe 2000)

Multitude of evidence suggests that active institutional investors create value for shareholders by effectively influencing the governance, capital structure decisions, and operating performance of target firms (e.g. Brav et al. 2008). Instead, passive institutional investors are suspected to weaken the governance and performance of firms.

However, the main finding of this emerging literature proves that passive investors are active owners: they improve various aspects of corporate governance and enhance firm transparency (Appel et al. 2016; Crane et al. 2016; Boone and White 2015). Passive institutions pressure portfolio firms by monitoring managers and improving market performance - because they do not have the power to exit - and these activities increase the value of their assets under management (Appel et al. 2016). When it comes to influencing others, passive institutional investors use their sizable voting blocks to wield influence (Appel et al. 2016; Crane et al. 2016), and they are also effective in a widespread and low-cost monitoring of firms (Black 1998; Appel et al. 2016).

To summarize, institutional investors are better at monitoring than individuals, they may value short-term over long-term, they generally act more rationally than individuals when they buy and sell shares, and both active and passive investors increase the value of their target companies. However, we cannot homogenize institutional investors - in contrast, they are very much a heterogeneous group of investors (e.g. Bushee 1998).

4 HYPOTHESES DEVELOPMENT

Chapter four introduces the hypothesis which are based on the concepts and theories described in the chapters two and three.

While the number of studies investigating the relationship between institutional investors and corporate tax avoidance keeps increasing, the results still show some contradictory evidence. This study tries to add value on three aspects of the young field: (1) the overall effect of institutional investors on corporate tax avoidance, (2) institutional investors and corporate conforming tax avoidance (3) the relationship between the number of institutional owners and corporate tax avoidance.

4.1 Nonconforming tax avoidance

The first issue, corporate nonconforming tax avoidane, is discussed by all research papers that study the the relationship of institutional investors and corporate tax avoidance. While Bird and Karolyi (2017), Chen et al. (2015) and Khan et al. (2016) find evidence of a positive relationship, Khurana and Moser (2013) and Hasan et al. (2016) argue for negative relation. The positive relation is reasoned to come from governmental activities (Bird and Karolyi 2017; Chen et al. 2015), better international tax planning (Bird and Karolyi 2017), better state and federal tax planning (Chen et al. 2015), incentive alignment (Desai and Dharmapala 2006, 2009; Armstrong et al. 2015), and aggressive tax sheltering (Bird and Karolyi 2017; Khan et al. 2016). Summarized, the studies state that institutional investors bring companies abilities to monitor managers, and also tax planning knowledge which both improve tax planning of the company. Monitoring managers makes the managers work more effectively and thus enforces effective tax planning. This reasoning is consistent with the general research on the role of institutional investors: institutions are good at monitoring and gathering information.

Khurana and Moser (2013) and Hasan et al. (2016) highlight the importance of long-term investment horizon, and they argue that reputational effect plays an important role. Desai and Dharmapala (2006, 2009) and Armstrong et al. (2015) both argue that if the initial level of corporate tax avoidance is very high, investors want to decrease it either because they want to

lower the level of possible managerial rent extraction (Desai and Dharmapala) or because they want to lower high risks associated with high tax avoidance (Armstrong et al.).

All of the above mentioned research papers have used only nonconforming tax avoidance measures to test the relationship between institutional investors and corporate tax avoidance. Thus, the following hypotheses of mine refer only to nonconforming tax avoidance.

H1a: Firms with more institutional investors exhibit higher levels of nonconforming tax avoidance.

H1b: Firms with more institutional investors exhibit lower levels of nonconforming tax avoidance.

4.2 Conforming tax avoidance

Badestscher et al. (2013) aknowledge that private firms are less subject to financial reporting pressures than public firms, which means that they may engage in more conforming tax avoidance than public firms. I do not intend to distinguish between private and public firms in my research sample and though I only want to test if there is any associaton between institutional owners and corporate conforming tax avoidance. Since no prior research exist, I set two hypotheses as follows.

H2a: Firms with more institutional investors exhibit higher levels of conforming tax avoidance.

H2b: Firms with more institutional investors exhibit lower levels of conforming tax avoidance.

4.3 Number of institutional owners

Fich et al. (2015) argue that total institutional ownership may be a noisy measure of the underlying variable of interest, and that the measure may be behind some contradictory results in the prior literature. Edmans and Manso (2011) suggest that in addition to total institutional ownership, the number of institutional blockholders is another important factor and may be relevant for future empirical work. In fact, many firms have multiple small blockholders (Faccio and Lang 2002; Maury and Pajuste 2005), which leads to a free-rider problem: each investor

individually has insufficient incentives to bear the cost of monitoring (Grossman and Hart 1980).

Based on above, I hypothyse that firms with multiple blockholders may be less efficient at tax planning because of the free-rider problem. In other words, firms with multiple blockholders engage in less tax avoidance than firms with fewer blockholders.

H3: Firms with multiple institutional shareholders exhibit lower levels of tax avoidance.

5 DATA AND METHODOLOGY

In this section I will briefly describe the data collection procedure, and exhaustively present the empirical models used.

5.1 Sample selection

First of all, I select all firm-year observations in Compustat for fiscal years 2011 through 2015, which amounts to total 46,368 observations. Secondly, I use Thomson Reuters database to get institutional ownership data for the same period 2011-2015. I use SPSS to both process and analyze the data.

Institutional ownership information is reported by institutional investor managers quarterly. Managers are required to file the SEC Form 13F filing if they have $100 million or more ownership in Section 13f securities. Section 13f securities refer to equity securities; they include, for example, U.S. exchange-traded stocks (e.g. NYSE, NASDAQ). A list of Section 13f securities is available always shortly after the end of each quarter on the SEC's website. An institutional investment manager is an entity that invests in, buys or sells securities for its own account. An institutional investment manager is also a person or an entity that exercises investment discretion over the account of any other person or entity. A person who buys and sells securities for his own account is not an institutional investment manager. (SEC 2017)

Thomson Reuters provides institutional ownership data by each investor quarterly. For instance, if the firm has over 1,500 different institutional owners, the firm is represented in the data over 6,000 times (4 quarters * 1,500 investors) in one year, meaning over 6,000 rows in SPSS in one year. Before making a reconciliation with the Compustat data, the Thomson Reuters data needs further processing so that I have the average shares owned by institutional investors in each firm in each year, and the number of different institutional owners in each firm in each year. After that I make a reconciliation between the Compustat and Thomson Reuters data sets, so that each Compustat observation now has institutional ownership information if available.

I delete all Compustat observations with missing values for institutional ownership. In this case, missing values mean either that the firm is not in any of the filed 13f forms, or that the firm was

not owned by any institution in the observation year. However, deleting the missing values is a safe procedure and common in prior research (see e.g. Khurana and Moser 2013). The sample size is now reduced to 26,767 observations.

After deleting observations with missing values for institutional ownership information, I delete all observations with missing values for total assets. Also, I follow prior research (see e.g. Khurana and Moser 2013, Badertscher et al. 2016) and eliminate all financial institutions (SIC codes 6000-6999) and utilities (SIC codes 4900-4999). Those firms are subject to a different set of tax and accounting rules (Hanlon et al. 2005). With these eliminations, the sample now consists of 16,542 observations.

Next I delete observations which have insufficient data to calculate my tax avoidance measures, and all observations with insufficient data to calculate my control variables. Few control variables, specifically indicator variables for loss carry forwards and income in foreign operations, are set to zero for the missing values. This yields a final sample of between 8,624 and 6,686 firm-year observations depending on the measure of tax avoidance.

Table 2 summarizes the sample selection process.

TABLE 2. Data processing

Firm-year observations in Compustat between 2011-2015	46,368
Less observations with missing values for institutional ownership	-19,601
Subtotal	26,767
Less missing values for total assets	-3,874
Less financial service firms and regulated public utilities (SIC code 6000-6999 & 4900-4999)	-6,351
Subtotal	16,542
Less observations with insufficient data to calculate measures of tax avoidance (CASH ETR, GAAP ETR)	-6,392
Subtotal	10,150
Less observations with missing data to calculate control variables	-1,526
Total observations for CASH ETR and GAAP ETR regression estimations	**8,624**
Less obervations with missing values to calculate CONFORM_TAX and BTD	-1,938
Total observations for CONFORMING_TAX and BTD regression estimations	**6,686**

5.2 Empirical model

To test my hypotheses, I estimate the following regression equation using ordinary least squares (OLS):

$$TAX_{it} = \alpha_{it} + \beta_1 InstOwnership_{it} + \sum \beta_{j+1} C_{it}, \quad (1)$$

where:

TAX = a proxy for tax avoidance

InstOwnership = a set of test variables

C = a set of control variables

Subscripts *i* and *t* refer to company and year, respectively.

5.2.1 Dependent variables

Following prior literature, I employ multiple tax avoidance measures. This allows me to examine the robustness of the results. As my main measures of nonconforming tax avoidance behavior, I use two effective tax rates, *GAAP_ETR* and *CASH_ETR*. I follow Dyreng et al. (2010) in measuring *GAAP_ETR* as total tax expense divided by pretax income and *CASH_ETR* as cash taxes paid divided by pretax income. As the rates are not meaningful for firms with negative pretax income, all observations with negative pretax income are excluded from analysis; firms that have negative pretax income have only a weak incentive to engage in tax avoidance activity as they may never be able to benefit from it. Also, all observations with pre-tax income equal to zero are excluded as denominators cannot be zero. Hence, my analysis focus on firms with positive pretax income and thus positive estimated taxable income for the most of the firms. After calculating the rates, I winsorize the resulting values to 0 and 1, which is consistent with Dyreng et al. (2010).

These effective tax rate measures capture the average rate of tax per dollar of income. As mentioned, one of the downsizes of the measures is that analysis can focus only on firms with positive pretax income. However, the measures are widely used as they are easily observable and salient measures of tax avoidance activities (Bird and Karolyi 2017). The *GAAP_ETR*

affects accounting earnings. It does not reflect tax deferral strategies, but it could be affected by several items that are not tax planning strategies, such as changes in the valuation allowance. The *GAAP_ETR* reflects permanent book-tax differences. (Hanlon and Heitzman 2010)

The *CASH_ETR*, on the other hand, is affected by tax deferral strategies, but it is not affected by changes in tax accounting accruals. The *CASH_ETR* reflects both permanent and temporary book-tax differences. Both measures capture only nonconforming tax avoidance strategies. (Hanlon and Heitzman 2010).

My third measure of nonconforming tax avoidance is a book-tax difference, *BTD*, measured as the difference between pretax income and estimated taxable income (e.g. Mills 1998, Desai 2003, Badertscher et al. 2016). Following closely prior literature, I calculate the estimated taxable income by summing current federal tax expense and current foreign tax expense, dividing it by the statutory tax rate, and then subtracting the change in loss carryforwards in the beginning of the year. The statutory tax rate is the top U.S. statutory tax rate applicable to that data year, being 35 percent for the all my data years (OECD Statistics). The *BTD* captures both permanent and temporary book-tax differences. Also like ETRs, *BTD* proxies have several limitations. Small values in the denominators induce skewness, different rules for calculations of the book and tax incomes can distort book-tax difference proxies based on estimated taxable income, and finally, using the U.S. statutory tax rate of 35 percent often underestimates foreign taxable income as most countries have lower top statutory tax rate than the U.S. (Hanlon 2003).

My fourth measure of tax avoidance behavior is *CONFORMING_TAX*, which is measured following Badertscher et al. (2016). The measure is one of the first measures in the literature that try to capture conforming tax avoidance. Prior to that, studies have focused mainly on capturing nonconforming tax avoidance as many generally accepted measures for it exist. Prior studies also assume that public firms are not that tempted to engage in conforming tax avoidance because of the public pressure to create high accounting earnings (Chen et al. 2010). However, Hanlon and Heitzman (2010) call for a new measure of conforming tax avoidance, so that studies could obtain a broader perspective on firm's tax avoidance activities. This thesis tries to offer such a broad perspective by including the only recently created conforming tax avoidance measure of Badertscher et al. in addition to commonly used ETRs and BTD.

The *CONFORMING TAX* is obtained by regressing the following equation and extracting the residual as the proxy for *CONFORMING_TAX*:

$$TAXESPAID\_TO\_ASSETS = \beta_0 + \beta_1 BTD_{it} + \beta_2 NEG_{it} + \beta_3 BTD_{it} * NEG_{it} \quad (2)$$
$$+\beta_4 NOL_{it} + \beta_5 \Delta NOL_{it} + \beta_6 SALES\_TO\_NOA_{it} + e_{it},$$

where

TAXESPAID_TO_ASSETS = ratio of cash taxes paid to lagged total assets

BTD_{it} = measure of book-tax-difference

NEG_{it} = indicator set to 1 if the firm has negative BTD

$BTD_{it} * NEG_{it}$ = interaction of BTD and NEG

NOL_{it} = indicator set to 1 if the firm has loss carryforward available

ΔNOL_{it} = change in the loss carryforwards

$SALES\_TO\_NOA_{it}$ = ratio of net sales to net operating assets

I regress the ratio of cash taxes paid to lagged total assets (*TAXESPAID_TO_ASSETS*) on six control variables and control also for year and industry fixed effects, consistently with Badertscher et al. (2016). Similarly to *CASH_ETR*, the numerator of the *TAXESPAID_TO_ASSETS* is reduced by deferral tax strategies, and it is not affected by tax accounting accruals. The denominator of the ratio is a lagged balance sheet measure, which is neither sensitive to current period transactions nor to a variation in pretax profitability. However, the problem with the ratio is that both conforming and nonconforming tax strategies reduce it. That is why it is regressed on control variables – the control variables are meant to eliminate the effect of the nonconforming tax avoidance.

The equation takes into account both positive and negative book-tax differences (*BTD*) to remove the impact of nonconforming tax strategies: an indicator variable *NEG* is set to one for observations with negative book-tax differences, and *BTD*NEG* is the interaction of *BTD* and *NEG*. Other control variables include *NOL* and ΔNOL which control the level and changes of

net operating loss carryforwards because the utilization of loss carryforwards will reduce cash taxes paid, but it is not indicative of conforming tax avoidance. Additionally, the ratio of net sales to net operating assets *SALES_TO_NOA* controls for the impact of non-tax operating decisions. If the firm has more non-operational costs (e.g. advertisement) for strategic rather than tax reasons, then the firm should exhibit a different level of operating efficiency than other firms. (Badertscher et al. 2016)

5.2.2 Test variables

I include two test variables which relate to the role of institutional ownership. First one is a continuous variable, *InstOwn*, which is calculated as the average shares owned by institutional investors in year t divided by total shares at the end of year t. *InstOwnNumber_dum* is an indicator variable which is set to 1 if the firm's stock is owned by less than 40 different institutions, and 0 otherwise.

The boundary for the indicator variable, 40, is chosen because with the boundary of 50, the results start to become contradictory. I also test the regression with lower boundaries to see whether the results stay similar. The results start to become contradictory with a boundary of 10 (specifically, the *GAAP_ETR* differs from the other nonconforming tax avoidance measures). However, the firms with less than 10 different institutional shareholders represent only 5-7 percent of the whole sample, or 324-627 firm-year observations, depending on the tax avoidance measure, and the results are not significant.

5.2.3 Control variables

The selection of the independent variables follows the existing literature (e.g. Dyreng et al. 2010, Khurana and Moser 2013, Badertscher et al. 2013, Bird and Karolyi 2017). I control for the firm's profitability (*PI*), leverage (*LEV*), loss carryforwards (*NOL_dum*), size (*SIZE*), sales change (Δ*SALES*), cash holdings (*CASH_HOLD*), property, plant and equipment (*PPE*), intangible assets (*INTANG*), income from subsidiaries (*EQINC_dum*), foreign income (*FORINC_dum*), different type of expenditures - capital (*CAPEX*), advertisement (*ADVEX*), research and development (*RDEX*), and selling, general and administrative (*SGAEX*) - and year

and industry fixed effects. I divide the control variables into four groups for further inspection: (I) need for tax avoidance, (II) differences in financial and tax accounting treatment, (III) nontax expenditures, and (IV) year and industry fixed effects.

(I) Need for tax avoidance (*PI, LEV, NOL_dum, SIZE,* Δ*SALES, CASH_HOLD*)

My first set of variables controls for firms' different incentives for tax avoidance activities. Prior literature suggests that more profitable firms avoid more taxes which is intuitively understandable: the benefit in absolute dollars from tax avoidance activities is greater the greater the profit of the firm. *PI* is calculated as pretax income scaled by lagged assets.

Leverage, on the other hand, creates a tax shield: the more leveraged a firm, the less it needs to avoid taxes in other ways. The effect of tax deductibility of the interest was recognized first by Modigliani and Miller (1963). *LEV* is calculated as long-term debt scaled by lagged assets.

Firms that have loss carryforwards have weaker incentives to engage in tax avoidance activities for two reasons (Badertscher et al. 2016). First, they may never be able to utilize the benefits gained. Second, even that they would start generating profits this year, they can deduct the losses from previous years which would not probably encourage tax avoidance activities before next year. *NOL_dum* is an indicator variable set 1 for the firms that have net operating loss carryforwards available at the beginning of year.

A study of Dyreng et al. (2008) indicate that small firms are more likely to have higher effective tax rates. In other words, it seems that the bigger the firm, the greater the need for tax planning (through motivation or capability). Thus, it is important to control for size. *SIZE* is calculated as the natural logarithm of assets.

Also, prior research suggests that high growth firms have more investments that generate increased book-tax differences. Chen et al. (2010) note that growing firms may invest in more tax-favored assets. Δ*SALES* is calculated as the annual percentage change in net sales.

Finally, low cash holdings may lead to a greater need for tax avoidance. *CASH_HOLD* is calculated as cash and cash equivalents scaled by total assets.

(II) Differences in financial and tax accounting treatment (*PPE, INTANG, EQINC_dum, FORINC_dum*)

My second set of variables control for differences in financial and tax accounting treatment. Prior research suggests that firms with higher levels of either fixed or intangible assets have higher non-debt tax shields because they can have higher depreciation or amortization deductions for tax purposes than those for accounting purposes. *PPE* is calculated as net property, plant and equipment scaled by lagged assets. *INTANG* is calculated as intangible assets scaled by lagged assets.

Income received from participations in group companies, related entities or other fixed assets is often treated differently for financial and tax accounting purposes (Chen et al. 2010; Frank et al. 2009). An indicator variable *EQINC_dum* is set to 1 if the firm has equity income in earnings.

Lastly, foreign income is treated differently for financial and tax accounting purposes, as was also touched on previously in this thesis (see chapter 2.2.1). An indicator variable *FORINC_dum* is set to 1 if the firm has foreign income.

(III) Nontax expenditures (*CAPEX, ADVEX, RDEX, SGAEX)*

Whether to include or not the third set of control variables was a decision that needed the most consideration. For instance, if I included spending on advertisement as a control variable in my regression model, I would assume that the spending decision is a nontax decision. In other words, possible effect on tax rate is only a byproduct. If I did not include spending on advertisement as a control variable in the regression, then the assumption would be that spending on advertisement is intentional on the part of institutional investors in order to affect the tax rate. Since I do not know which are the ways of institutional investors to affect corporate tax planning, I have to arbitrarily choose between the two designs, similarly to previous research. I choose to include these variables and I interpret the results accordingly. Dyreng et al. (2010) and Bird and Karolyi (2017), among others, made the same choice, but Khurana and Moser (2013), for example, did not include these control variables.

CAPEX is calculated as capital expenditure divided by sales, *ADVEX* as advertisement expenditure divided by sales, *RDEX* as research and development expenditure divided by sales, and *SGAEX* as sales, general and administrative expenditure divided by sales.

(IV) Year and industry fixed effects

Every prior research paper controls for year and industry fixed effects, so I follow them and do the same. I create four dummy variables for years (2011-2014) and 12 dummy variables for industries based on Barth et al. (1998) industry groups.

5.2.4 Variable summary

Table 3 summarizes all variables used in the main regression estimations. More comprehensive variable summary with all Compustat data items is to be found in APPENDIX 1, panels A and B.

TABLE 3. Variable definitions

As each variable is described, Compustat pneumonic is in parantheses	
Dependent variables	
CASH_ETR =	the cash effective tax rate, defined as cash taxes paid (TXPD) divided by pre-tax book income (PI). *CASH_ETR* is set to missing when the denominator is zero or negative. *CASH_ETR* is winsorized to the range [0, 1].
GAAP_ETR =	the financial accounting effective tax rate, defined as total tax expense (TXT) divided by pre-tax income (PI). *GAAP_ETR* is set to missing when the denominator is zero or negative. *GAAP_ETR* is winsorized to the range [0, 1].
BTD =	book-tax differences, defined as book income (PI) less taxable income [(TXFED+TXFO)/STR - ΔNOL]
CONFORMING_TAX =	the residual from equation *TAXESPAID_TO_ASSETS*
Test variables	
InstOwn =	The average percentage of the firm's stock owned by institutional shareholders in year t
InstOwnNumber_dum =	An indicator if the firm's stock is owned by less than 40 different institutions
Control variables	
PI =	pretax income (PI) scaled by lagged assets (AT_{t-1})

LEV =	leverage; long-term debt scaled by lagged assets
NOL_dum =	an indicator if the firm has a non-zero, non-missing value for net operating loss carry forwards (TLCF) in the beginning of the year
SIZE =	natural logarithm of total assets (AT)
Δ*SALES* =	sales (SALE) divided by sales of the previous year ($SALE_{t-1}$) minus one.
CASH_HOLD =	cash and short-term investments (CHE) scaled by total assets (AT)
PPE =	net property, plant and equipment (PPENT) scaled by lagged assets (AT_{t-1})
INTANG =	intangible assets (INTAN) scaled by lagged assets (AT_{t-1})
EQINC_dum =	an indicator if the firm has equity income in earnings (ESUB)
FORINC_dum =	an indicator if the firm has a non-zero, non-missing value for pre-tax income from foreign operations (PIFO)
CAPEX =	Capital expenditure (CAPX) divided by net sales (SALE)
ADVEX =	Advertisement expenditure (XADV) divided by net sales (SALE)
RDEX =	Research and development expenditure (XRD) divided by net sales (SALE)
SGAEX =	Sales, general and administrative expenditure (XSGA) divided by net sales (SALE)
Other variables	
YEAR =	indicator variables for observation years
INDUS =	indicator variables for industry groups

Furthermore, the following equation (3) summarizes the chapter three by showing the equation (1) in its extended form. As discussed above, I run the regression separately for each of the dependent variables *CASH_ETR*, *GAAP_ETR*, *BTD* and *CONFORMING_TAX* (denoted with *TAX*).

$$TAX_{it} = \alpha_{it} + \beta_1 * InstOwn_{it} + \beta_2 * InstOwnNumber\_dum_{it} + \beta_3 * PI_{it} + \beta_4 * LEV_{it} + \beta_5 * NOL\_dum_{it} + \beta_6 * SIZE_{it} + \beta_7 * \Delta SALES_{it} + \beta_8 * CASH\_HOLD_{it} + \beta_9 * PPE_{it} + \beta_{10} * INTANG_{it} + \beta_{11} * EQINC\_dum_{it} + \beta_{12} * FORINC\_dum_{it} + \beta_{13} * CAPEX_{it} + \beta_{14} * ADVEX_{it} + \beta_{15} * RDEX_{it} + \beta_{16} * SGAEX_{it} + YearDummies + IndustryDummies + \varepsilon_{it} \quad (3)$$

6 EMPIRICAL RESULTS

The purpose of the section is to find out how institutional investors impact corporate tax avoidance. In other words, the section presents the results about how my empirical findings support my hypothesis. First, I provide some descriptive statistics concerning the dataset and correlations among the variables. Then, regression results are presented and analyzed in three sets: nonconforming tax avoidance, conforming tax avoidance and number of institutional shareholders. Finally, I go through the additional tests that I conducted in order to test the robustness of the results.

6.1 Descriptive statistics

This chapter presents descriptive statistics of variables. I start by reporting the statistics for the dependent variables, then for the other variables. Finally, I compare my sample's industry characteristics to those of the corresponding Compustat population.

Table 4 Panel A provides descriptive statistics for all variables used in my analysis including both dependent variables (*CASH_ETR*, *GAAP_ETR*, *BTD*, *CONFORM_TAX*) and test and control variables. I do not report the statistics of control and test variables for using the reduced sample of 6,686 observations – they are like those reported in Table 4 Panel A.

The mean (median) value for the cash effective tax rate (*CASH_ETR*) is 25.5 percent (23.0 percent), which is consistent with the distributional characteristics for cash effective tax rate reported in Dyreng et al. (2008). The mean (median) for the GAAP effective tax rate is 29.2 percent (30.9 percent), which is also consistent with the distributional characteristics for GAAP effective tax rates of prior literature (see e.g. Dyreng et al. 2010). The mean for book-tax differences (*BTD*) is positive, which means that the average firm in my sample reports more financial accounting income than taxable income. Also, the average firm in my sample engages in conforming tax avoidance, which is reflected in the positive values of *CONFORMING_TAX*.

The mean (median) value of institutional ownership is 56.4 percent (65.8 percent), which is consistent with the average level of institutional ownership of samples used in prior research (e.g. Khurana and Moser 2013, Ali et al. 2008). The median firm in my sample is profitable

with a PI scaled by assets of 8.7 percent, and is moderately leveraged with a debt-to-asset ratio of 15.1 percent. 59.4 percent of firms in my sample have tax loss carryforwards from prior years, which is quite a large representation. The explanation could be that my sample period represents time after financial crisis that started 2007-2008.

The median firm in my sample is a growing firm, generating 8.7 percent more sales in each year. Also, the median firm in my sample has 19.8 percent of property, plant and equipment of total assets, and 14.5 percent of intangible assets of total assets. The share of intangibles is rather high compared to the samples of prior research, which makes sense since intangible assets have become increasingly important today.

The mean (median) values for different expenditures of sales are 3.6 percent (0.0 percent) for research and development, 1.2 percent (0.0 percent) for advertisement, 24.9 percent (20.2 percent) for capital, and 22.7 percent (19.2 percent) for selling, general and administrative.

Table 4 Panel B provides descriptive statistics for input variables used in the regression estimation of *CONFORMING_TAX*.

Table 4 Panel C compares industry characteristics of my sample to those of the unprocessed Compustat population in fiscal year 2011, which is the year that has the largest representation in my sample. The industry groups are based on the Barth et al. (1998) industry groups, and as it should be, financial services, real estate and insurance companies (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) are not present in my sample. The comparison between my sample and that of the Compustat population is to get a sense of whether my sample is somehow different, which could limit generalizability. I find my sample to represent the division of the Compustat population quite well.

TABLE 4. Descriptive statistics

Panel A: Descriptive Statistics						
	n	Std. dev.	25th pctl.	Mean	Median	75th pctl.
Tax position						
CASH_ETR	8624	0.216	0.095	0.255	0.230	0.341
GAAP_ETR	8624	0.181	0.198	0.292	0.309	0.371
BTD	6686	0.087	0.006	0.038	0.026	0.054
CONFORMING_TAX	6686	0.036	0.012	0.032	0.024	0.043
Test variables						
InstOwn	8624	0.323	0.272	0.564	0.658	0.839
InstOwnNumber_dum	8624	0.406	0.000	0.208	0.000	0.000
Control variables						
PI	8624	0.127	0.049	0.114	0.087	0.145
LEV	8624	0.259	0.002	0.207	0.151	0.306
NOL_dum	8624	0.491	0.000	0.594	1.000	1.000
SIZE	8624	2.089	5.826	7.187	7.230	8.546
Δ*SALES*	8624	0.491	-0.005	0.116	0.065	0.161
CASH_HOLD	8624	0.170	0.046	0.172	0.117	0.243
PPE	8624	0.278	0.088	0.287	0.198	0.403
INTANG	8624	0.268	0.028	0.224	0.145	0.345
FORINC_dum	8624	0.498	0.000	0.547	1.000	1.000
EQINC_dum	8624	0.474	0.000	0.342	0.000	1.000
CAPEX	8624	0.264	0.129	0.249	0.202	0.316
ADVEX	8624	0.031	0.000	0.012	0.000	0.008
RDEX	8624	0.077	0.000	0.036	0.000	0.039
SGAEX	8624	0.186	0.094	0.227	0.192	0.323

Panel B: Descriptive Statistics for input variables for estimation of *CONFORMING_TAX*						
	n	Std. dev.	25th pctl.	Mean	Median	75th pctl.
Tax position						
TAXESPAID_TO_ASSETS	6686	0.036	0.005	0.027	0.018	0.038
Control variables						
BTD	6686	0.087	0.006	0.038	0.026	0.054
NEG_Dum	6686	0.384	0.000	0.180	0.000	0.000
*BTD*NEG*	6686	0.024	0.006	-0.005	0.026	0.054
NOL_Dum	6686	0.487	0.000	0.612	1.000	1.000
ΔNOL	6686	0.020	0.000	0.001	0.000	0.000
SALES_TO_NOA	6686	4.508	1.051	2.786	1.819	3.083

Panel C: Descriptive Statistics			
	SIC codes	Sample%	Compustat%
Industry			
Agriculture, forestry and fishing	100-999	0.13	0.29
Mining and construction	1000-1299, 1400-1999	2.15	2.81
Food	2000-2111	2.40	1.58
Textiles, printing and publishing	2200-2799	5.05	1.93
Chemicals	2800-2824, 2837-2899	5.68	1.75
Pharmaceuticals	2830-2836	3.54	7.95
Extractive industries	1300-1399, 2900-2999	2.27	3.81
Durable manufacturers	3000-3569, 3580-3669, 3680-3999	29.92	11.77
Computers	3570-3579, 3670-3679, 7370-7379	23.86	10.21
Transportation	4000-4899	4.17	4.18
Utilities	4900-4999	0.00	3.70
Retail	5000-5999	10.23	5.31
Financial institutions	6000-6411	0.00	11.42
Insurance and real estate	6500-6999	0.00	26.82
Services	7000-7369, 7380-8999	9.97	5.50
Other	9000-9999	0.63	0.97

6.2 Correlations

The chapter compounds correlations among the variables.

Table 5 presents Pearson correlations among the variables used in my regression model. The book-tax difference measure is negatively correlated with the effective tax rate measures. The conforming tax avoidance measure is positively correlated with the effective tax rate measures. Moreover, the correlations of the tax avoidance measures with institutional ownership measures (continuous variable *InstOwn* and the indicator variable *InstOwnNumber_dum*) are statistically significant except the correlation between the *CASH_ETR* and *InstOwn* is not statistically significant.

TABLE 5. Correlation matrix of the variables

Panel A: Correlation variables *CASH_ETR* to *SIZE*

		1	2	3	4	5	6	7	8	9	10
1	*CASH_ETR*	1.000									
2	*GAAP_ETR*	**0.404**	1.000								
3	*BTD*	**-0.347**	**-0.284**	1.000							
4	*CONFORMING_TAX*	**0.293**	**0.126**	0.001	1.000						
5	*InstOwn*	0.014	**0.080**	**-0.122**	**0.080**	1.000					
6	*InstOwnNumber_dum*	**-0.032**	**-0.063**	**0.085**	**-0.070**	**-0.664**	1.000				
7	*PI*	**-0.100**	**-0.072**	**0.580**	**0.676**	0.011	**-0.029**	1.000			
8	*LEV*	**-0.069**	**-0.024***	0.018	**-0.066**	**0.120**	**-0.147**	**-0.056**	1.000		
9	*NOL_dum*	**-0.049**	-0.015	-0.006	-0.010	**0.121**	**-0.110**	**-0.079**	**0.049**	1.000	
10	*SIZE*	**0.025***	**-0.031**	**-0.042**	**0.134**	**0.237**	**-0.491**	**0.048**	**0.171**	**0.057**	1.000
11	Δ*SALES*	**-0.096**	**-0.051**	**0.141**	**0.081**	-0.002	-0.004	**0.150**	**0.058**	0.011	-0.021
12	*CASH_HOLD*	**-0.052**	**-0.092**	**0.127**	**0.097**	**-0.031**	**0.050**	**0.241**	**-0.310**	**0.038**	**-0.124**
13	*PPE*	**-0.126**	**-0.022***	**0.081**	**-0.076**	**-0.078**	-0.018	-0.018	**0.319**	**-0.115**	**0.081**
14	*INTANG*	**0.043**	**0.024***	**-0.058**	**0.030***	**0.168**	**-0.149**	-0.018	**0.372**	**0.116**	**0.170**
15	*EQINC_dum*	**0.021***	**-0.028**	-0.022	**-0.077**	**-0.118**	**-0.063**	**-0.104**	**0.108**	0.002	**0.391**
16	*FORINC_dum*	**0.090**	-0.004	**-0.110**	-0.022	**0.361**	**-0.272**	**-0.058**	**-0.031**	**0.215**	**0.172**
17	*CAPEX*	-0.007	0.009	**0.032**	**0.029***	**0.036**	**-0.039**	**0.071**	**-0.081**	**0.061**	0.004
18	*ADVEX*	0.004	0.004	0.003	**0.058**	**0.029**	**-0.054**	**0.042**	0.009	**0.021***	**0.077**
19	*RDEX*	**-0.076**	**-0.127**	**0.166**	**-0.063**	**0.036**	**-0.038**	**0.074**	**-0.146**	**0.093**	**0.034**
20	*SGAEX*	0.002	**-0.023***	**0.037**	0.014	**0.028**	**0.028**	**0.073**	**-0.177**	**0.093**	**-0.106**

Panel B: Correlation variables Δ*SALES* to *SGAEX*										
	11	12	13	14	15	16	17	18	19	20
11 Δ*SALES*	1.000									
12 *CASH_HOLD*	**0.114**	1.000								
13 *PPE*	**0.070**	**-0.327**	1.000							
14 *INTANG*	**0.056**	**-0.218**	**-0.256**	1.000						
15 *EQINC_dum*	**-0.065**	**-0.193**	**0.110**	-0.016	1.000					
16 *FORINC_dum*	-0.020	**0.084**	**-0.274**	**0.143**	-0.011	1.000				
17 *CAPEX*	**0.048**	**0.160**	**-0.160**	**0.058**	**-0.067**	**0.046**	1.000			
18 *ADVEX*	-0.001	**0.106**	**-0.092**	**0.069**	**-0.033**	**0.039**	**0.099**	1.000		
19 *RDEX*	**0.104**	**0.428**	**-0.255**	**0.040**	**-0.092**	**0.177**	**0.120**	0.010	1.000	
20 *SGAEX*	-0.001	**0.376**	**-0.347**	**0.123**	**-0.201**	**0.158**	**0.172**	**0.290**	**0.527**	1.000

Correlation values in bold indicate significance at 1 percent, except values in bold with asterisk(*) indicate significance at 5 percent.

6.3 Regression results

This chapter can be argued to be one of the most important in my thesis as it presents the regression results. I will start by showing the figures of the regression results. Then, I go to the analysis and proceed the subject areas as follows: institutional shareholders and nonconforming tax avoidance, institutional shareholders and conforming tax avoidance, and number of institutional shareholders and corporate tax avoidance.

Table 6 presents the results from the regression estimation. I estimate the model using ordinary least squares (OLS) regression with *CASH_ETR*, *GAAP_ETR*, *BTD* and *CONFORMING_TAX* as the dependent variables. In all estimations year and industry fixed effects are included, but I do not report their coefficients for brevity. The explanatory power of the equation ranges from 0.05 to 0.55. Firms that engage in more tax avoidance practices have lower effective tax rates - that is to say, the coefficients are negative (-) in the following table – and higher levels for the *BTD* and *CONFORMING_TAX*, reflected as positive coefficients (+).

TABLE 6. Regression results

	CASH_ETR	*GAAP_ETR*	*BTD*	*CONFORMING_TAX*
Intercept	0.343	0.325	0.038	-0.019
	(9.286)	**(10.359)**	**(1.950)**	**-(2.665)**
InstOwn	-0.038	0.031	-0.017	0.011
	-(3.709)	**(3.585)**	**-(3.963)**	**(7.208)**
InstOwnNumber_dum	-0.028	-0.031	0.003	-0.001
	-(3.279)	**-(4.392)**	(0.915)	-(0.742)
PI	-0.157	-0.081	0.427	0.195
	-(8.262)	**-(5.008)**	**(59.060)**	**(75.117)**
LEV	-0.059	-0.047	0.026	-0.008
	-(5.425)	**-(5.091)**	**(6.155)**	**-(5.539)**
NOL_dum	-0.034	-0.007	0.013	0.004
	-(7.188)	**-(1.716)**	**(7.351)**	**(6.435)**
SIZE	0.001	-0.006	-0.004	0.000
	(0.990)	**-(4.533)**	**-(6.448)**	(0.723)
Δ*SALES*	-0.025	-0.007	0.005	-0.001
	-(5.227)	**-(1.847)**	**(2.357)**	**-(1.868)**
CASH_HOLD	-0.022	-0.059	-0.027	-0.003
	-(1.198)	**-(3.821)**	**-(4.064)**	-(1.130)
PPE	-0.089	-0.037	0.018	-0.005
	-(7.830)	**-(3.841)**	**(4.141)**	**-(3.058)**
INTANG	0.039	0.016	-0.014	0.004
	(3.531)	**(1.707)**	**-(3.401)**	**(2.594)**
EQINC_dum	0.004	-0.006	0.007	-0.002
	(0.673)	-(1.184)	**(3.599)**	**-(2.116)**
FORINC_dum	0.039	-0.003	-0.004	0.001
	(7.163)	-(0.653)	**-(1.855)**	**(1.847)**
CAPEX	-0.002	0.011	-0.011	-0.003
	-(0.263)	(1.452)	**-(2.333)**	**-(1.907)**
ADV	-0.083	-0.045	0.053	0.002
	-(1.064)	-(0.685)	**(1.878)**	(0.244)
RD	-0.274	-0.262	0.231	-0.067
	-(6.965)	**-(7.862)**	**(16.860)**	**-(13.456)**
SGA	0.039	0.052	-0.024	0.002
	(2.369)	**(3.805)**	**-(3.749)**	(1.046)
Adjusted R2	7.23 %	4.75 %	40.36 %	54.67 %
Observations	8,624	8,624	6,686	6,686

6.3.1 Nonconforming tax avoidance

In this chapter, when I talk about "effect of institutional ownership" or something corresponding, I refer to the relationship between the fraction of the firm held by institutions and the firm's tax avoidance. Specifically, the relationship is tested by the test variable *InstOwn* in relation to the dependent variables *CASH_ETR, GAAP_ETR* and *BTD.*

The results are mixed for the effect of institutional ownership on nonconforming corporate tax avoidance. As the share of the institutional ownership increases, the *CASH_ETR* shows increased nonconforming tax avoidance. However, the *GAAP_ETR* and *BTD* indicate the adverse: as the share of institutional ownership increases, the firms employ less nonconforming tax avoidance practices. The reason behind the contradictory results could be that the variables measure different type of nonconforming tax avoidance. As earlier discussed, whereas the *GAAP_ETR* and *BTD* reflect tax accounting accruals, *CASH_ETR* does not. Also, Mills (1998) documents evidence that firms with large *BTD* are more likely to be audited by the IRS. This could lead to a situation where firms try to avoid such tax planning practices where the outcome is easily observable by the authorities. *CASH_ETR* is not straightly computable by jurisdiction in contrast to *GAAP_ETR* and *BTD* (Hanlon and Heitzman 2010).

The annual *CASH_ETR* may also reflect taxes paid on earnings in a different period if, for instance, an IRS audit is completed in the current year (Hanlon and Heitzman 2010). So, as the measure is more volatile for year-to-year changes, the other two nonconforming tax avoidance measures could be more reliable. Long-run cash ETR would work for testing the reliability of the *CASH_ETR* (Dyreng et al. 2008).

As it has been argued in prior research, the one year *CASH_ETR* is the most volatile, and thus the most unreliable measure of the all nonconforming tax avoidance measures used in my tests, I could interpret the results to give a slight support to the hypotheses 1b.

The result is consistent with that of Khurana and Moser (2013), but opposite to those of Bird and Karolyi (2017), Chen et al. (2015), and Khan et al. (2016). However, more tests are needed in order to reach a clearer conclusion.

The control variables indicate that profitable (*PI*) and growing (Δ*SALES*) firms, and firms with more property, plant and equipment in their balance sheets (*PPE*) tend to avoid more taxes. These results are pretty much as expected. The more profitable the firm, the more it benefits from tax avoidance in absolute dollars. High growth firms, on the other hand, have more investments that create increased book-tax differences. Firms with more property, plant and equipment to assets tend to have higher depreciations and, therefore, avoid more taxes.

I did not predict the signs of the coefficients related to *ADVEX* and *RDEX*, but the results show that firms with more advertisement (*ADVEX*) and R&D (*RDEX*) expenses tend to avoid more taxes.

Moreover, leveraged (*LEV*) firms tend to avoid more taxes. The result is opposite to what was expected. Leveraged firms should have a tax shield, which lowers the incentives to engage in tax avoidance activities. One possible explanation for the opposing results could be that firms with more debt need more cash for paying interests and amortizing the principal, which, in turn, could create an incentive to avoid taxes and tax payments.

The result of the firms with loss carryforwards (*NOL_dum*) engaging in more tax avoidance is both interesting and not as predicted. However, as was seen in the descriptive statistics, almost sixty percent of the firms in my sample have loss carryforwards available in the beginning of the year. The corresponding percentage values in the respective empirical researches is closer to thirty percent (see e.g. Khurana and Moser 2013). The difference is probably due that my sample represents time straight after a recession period. In that kind of situation, loss carryforwards may not be a good indicator of firms' tax avoidance behavior.

Firms with more intangible assets (*INTANG*) in their balance sheets, and firms with more selling, general and administrative expenses (*SGAEX*) avoid less taxes.

Finally, signs for cash holdings (*CASH_HOLD*), firm size (*SIZE*), equity income (*EQINC_dum*), foreign income (*FORINC_dum*), and capital expenditure (*CAPEX*) are mixed and depend on the specification.

6.3.2 Conforming tax avoidance

In this chapter - similarly to the previous chapter - when I talk about "effect of institutional ownership" or something corresponding, I refer to the relationship between the fraction of the firm held by institutions and the firm's tax avoidance. Specifically, the relationship is tested by the test variable *InstOwn* in relation to the dependent variable *CONFORMING_TAX*.

The *CONFORMING_TAX* indicates that firms with a greater institutional ownership portion engage in more conforming tax avoidance as the relationship is positive (0.011) and statistically significant. In other words, I find evidence to support the hypothesis H2a.

Moreover, the results indicate that profitable (*PI*) firms, and also firms with loss carryforwards available in the beginning of the year (*NOL_dum*), firms with more intangibles in their balance sheets (*INTANG*), and firms with foreign income (*FORINC_dum*) and more selling, general and administrative expenses (*SGAEX*) tend to engage in more conforming tax avoidance.

If I take a comprehensive picture with both nonconforming and conforming tax avoidance behaviors, only two kinds of firms engage in both kinds of tax avoidance: profitable firms and firms with loss carry forwards available in the beginning of the year. Growing and leveraged firms, firms with more property, plant and equipment or intangibles to assets, and firms with more advertisement, R&D or sales, general and administrative expenditures engage adversely in nonconforming and conforming tax avoidance. That is to say, if the firm engages more in nonconforming tax avoidance, it engages less in conforming tax avoidance.

6.3.3 Number of institutional owners

The results for the test variable *InstOwnNumber_dum* are intriguing. If the firm has less than forty different institutional shareholders, the firm engages in more nonconforming tax avoidance as reflected by the negative values for the *CASH_ETR* and *GAAP_ETR* and the positive value for the *BTD*, and slightly less in conforming tax avoidance as reflected by the negative value for the *CONFORMING_TAX*. The result is quite consistent with my expectations, and the H3 gets support.

However, I did not predict conforming tax avoidance to differ from nonconforming tax avoidance. So, after all, there are two different outcomes which can be stated as follows:

1. Firms with multiple institutional shareholders exhibit lower levels of nonconforming tax avoidance
2. Firms with multiple institutional shareholders exhibit higher levels of conforming tax avoidance

The first outcome can be reasoned by the argument that firms with multiple blockholders may have a free-rider problem. The results indicate that when there are mutliple insitutional shareholders in one firm, the characteristic of institutions being superior monitorers and information gatherers melts away. In that case each institutional investor individually has insuffiecien incentives to bear the cost of monitoring. In other words, a firm with few enough number of different institutional shareholders is more closely monitored than a firm with multiple number of different institutional shareholders. The firm with fewer shareholders benefits from the monitoring and knowledgeble institutional shareholders in a way that leads to more effective tax planning or tax avoidance.

It is more difficult to say whether the second result - that firms with multiple institutional shareholders engage in more conforming tax avoidance - tells something about monitoring. It could be considered that the managers of the firm with fewer number of institutional owners become aware of the monitoring, or that the monitoring itself means changing the management incentives which, in turn, affects the firm's conforming tax avoidance. Prior research (Jensen and Meckling 1976, Rego and Wilson 2012) assumes that firms write equity-based contracts to align managerial incentives with those of shareholders. More conscious managers may want to create better-looking profits to create value for the firm, and not to lower the financial income by conforming tax avoidance.

6.4 Robustness tests

In order to test the robustness of the results, I employ few additional tests. First, I replicate the regression estimation but only with few control variables. Second, I calculate *BTD* similarly to Manzon and Plesko (2002), and run the regression estimation for it.

6.4.1 Regression estimation with a minimal set of control variables

I repeat the tests with only few control variables: profitability (*PI*), size (*SIZE*), and year and industry fixed effects. This is similar to the robustness tests conducted by prior research (see Dyreng et al. 2010).

Table 7 presents the results of the regression estimation with a minimal set of control variables.

TABLE 7. Regression results with a minimal set of control variables

	CASH_ETR	*GAAP_ETR*	*BTD*	*CONFORMING_ TAX*
Intercept	0.283	0.315	0.011	-0.020
	(7.726)	**(10.231)**	(0.561)	**-(2.756)**
InstOwn	-0.017	0.033	-0.025	0.013
	-(1.698)	**(4.007)**	**-(5.981)**	**(8.502)**
InstOwnNumber_dum	-0.016	-0.021	0.009	0.000
	-(1.929)	**-(2.967)**	**(2.447)**	(0.116)
PI	-0.166	-0.106	0.412	0.191
	-(8.886)	**-(6.776)**	**(58.262)**	**(75.179)**
SIZE	0.004	-0.005	0.001	0.000
	(3.228)	**-(4.569)**	(1.462)	(0.415)
Adjusted R2	3.22 %	2.95 %	36.01 %	52.43 %
Observations	8,624	8,624	6,686	6,686

As can be seen, I keep finding very similar results.

6.4.2 Manzon and Plesko (2002) book-tax difference

I chose to use the book-tax difference as one of my measures for nonconforming tax avoidance. I measured it similarly to Mills 1998, Desai 2003 and Badertscher et al. 2016. However, most of the recent studies have used either BTD measured similarly to Manzon and Plesko (2002) or Rego and Wilson (2012). I conduct an additional test with Manzon and Plesko's BTD measure, from now on *MP_BTD*, to verify my results concerning the BTD. The *MP_BTD* is calculated as U.S. domestic financial income less U.S. domestic taxable income less state income taxes less equity in earnings and dividing the result by lagged total assets. U.S domestic taxable

income is estimated as the federal tax expense divided by the statutory corporate tax rate. I remove observations with negative federal taxable income - the sample now consists of 3,742 observations for the *MP_BTD* regression estimation.

The regression estimation where *MP_BTD* is the dependent variable gives similar results to the earlier used *BTD*; there should be no reliability problems in that sense regarding the use of BTD calculated similarly to Mills 1998, Desai 2003 and Badertscher et al. 2016. The results are shown in the APPENDIX 2. The only interesting difference is that the *MP_BTD* show decreased tax avoidance as the coefficient for *InstOwn* is positive (0.002). Albeit, the coefficient is small and not significant, and the test sample is limited, it still makes the results of nonconforming tax avoidance – specifically, the relationship of the fraction of the firm held by institutions and the firm's nonconforming tax avoidance - even more vague.

7 CONCLUSIONS

The final chapter will summarize the most important conclusions and present the contributions that I have made in this thesis. I will also suggest some future research topics. The core question of this thesis was: "Do institutional shareholders affect corporate tax avoidance?" Further hypotheses were drawn based on the prior research:

> **H1a**: Firms with more institutional investors exhibit higher levels of nonconforming tax avoidance.
>
> **H1b**: Firms with more institutional investors exhibit lower levels of nonconforming tax avoidance.
>
> **H2a**: Firms with more institutional investors exhibit higher levels of conforming tax avoidance.
>
> **H2b**: Firms with more institutional investors exhibit lower levels of conforming tax avoidance.
>
> **H3**: Firms with multiple institutional shareholders exhibit lower levels of tax avoidance.

As the research field is rather young – the most important papers concerning the topic are from 2010s – the causes and effects are not yet stable or established. This is also what makes the topic so intriguing.

7.1 Key findings

I find a slight evidence to support the H1a: Firms with more institutional investors exhibit higher levels of nonconforming tax avoidance. Two of my measures, *GAAP_ETR* and *BTD*, show decreased tax avoidance the more the firm is owned by institutions. *CASH_ETR*, on the other hand, suggest the opposite relation, but it can be argued that the measure may be volatile in the short term, reflecting taxes paid on earnings in a different period. However, Hanlon and Heitzman (2010) state that the *CASH_ETR* is not easily observable by jurisdictions in contrast to the *GAAP_ETR* and *BTD*. Then, it could also be argued that firms try not to stand out in the eyes of tax jurisdiction. Hence, they want to keep the easily observable tax measures - that is to

say, *GAAP_ETR* and *BTD* - to show figures that prove the firm to be a good tax payer. In that case, the *CASH_ETR* could give more reliable results. Anyway, more research is needed to argue more strongly on behalf of any relation.

When it comes to the conforming tax avoidance, my results suggest that institutional shareholders are slightly associated with corporate conforming tax avoidance. This result indicates that creating value in the form of saved money in tax payments is more important than creating high profits. However, the results do not give any hint what the reason behind could be. For instance, it does not tell who gives more value for the tax savings than high financial accounting profits – is it the management of the company or the (institutional) shareholders of the company? It could also be possible that conforming tax avoidance is exhibited only in specific situations in which the tax avoidance activities do not lead in psychologically significant differences in the reported profits. In their international study of cosmetic earnings management (CEM), Kinnunen and Koskela (2003) found evidence that if the second digit of the firm's net income was nine, the firm tends to do CEM to get the first digit increase by one. For instance, if the profit of the company is going to be 2.96 million dollars, it is better to get it above 3 million. On the other hand, if the profit is 2.12 million, maybe tax savings in forms of conforming tax avoidance is value creating as far as the profit level stays above 2 million. However, this is pure analysis and guessing without better knowledge; a different and more specific research design is needed to truly verify anything.

Then, the results suggest that firms with less than forty different institutional shareholders exhibit higher levels of nonconforming tax avoidance It is consistent with my expectations that firms with fewer blockholders are less exposed to the free-rider problem, and hence those firms benefit more from the knowledgeable institutional shareholders and their monitoring of the firms' managers. Also, those firms with less than forty different institutional shareholders engage in less conforming tax avoidance. This could be interpreted as giving some insight into the results of institutional shareholders being associated with corporate conforming tax avoidance in general. With less blockholders, and thus with more powerful monitoring, the firms do not engage that much in conforming tax avoidance. So, after all, it may be the managers, and lack of monitoring, that brings the firms to engage in more conforming tax avoidance. Then, again, it could be asked why the managers would like their firms to engage in conforming tax

avoidance. The answer could be related to inadequate incentives (see e.g. Rego and Wilson 2012), need for cash especially after the financial crisis, or maybe taking a big bath before the good years.

7.2 Contributions to the existing literature

In the introduction chapter I stated that my study aims to give further understanding about the impact of ownership on corporate tax practices by studying the role of institutional owners. There were three aspects to motivate me in the journey: (1) the contradictory results of prior corporate tax avoidance and institutional investor research, (2) the increasing share of institutional owners, and (3) the public concern of institutional investors being bad owners.

With my research, I have contributed to the literature about the relationship of corporate tax avoidance and institutional investors by two main ways. First, compared to prior research, my study has a broader perspective than any other studies before to the best of my knowledge. By including both conforming and nonconforming tax avoidance measures to my research design, I am able to catch the whole picture of the firm's tax avoidance activities. Prior studies have mainly focused on nonconforming tax avoidance, taking into account only measures that count for nonconforming tax avoidance. For instance, the study of Chen et al. (2010) was criticized by Hanlon and Heitzman (2010) for interpreting the results without taking into account the possibility of conforming tax avoidance. The same concern would possibly be addressed for many other research papers to some extent as most of them do not consider conforming tax avoidance at all. Analyzing results of such studies that have focused merely on noncorming tax avoidance may tell only half ot the truth about corporate tax avoidance.

Second, I could not find any papers that would have tested the relationship of number of institutional shareholders and corporate tax avoidance. The results are intriguing as they show that number of blockholders can significantly explain the relationship between institutional owners and their portfolio firms' tax avoidance. The number of institutional blockholders as a test variable could also solve some contrdictory results that have occurred in prior research. For instance, if included in the research desing of the studies of Chen et al. (2015), Khan et al.

(2016), and Bird and Karolyi (2017), the test variable could streamline the results concerning the use of tax shelters or the effect of corporate governance on tax avoidance.

7.3 Managerial implications

Based on this thesis there are the following managerial implications that can be concluded.

My study should be helpful in understanding the complexity of the corporate tax avoidance practices. As most of the academic research papers try to be very concise in what they state in order to keep the papers to their scope, thesis has more freedom in that sense. In a normal case, Master's theses are of between 60 and 100 pages of length, whereas research papers usually tend to stay in less than 30 pages, just to give a rought estimation. So, a thesis can be more verbose and thus more easily understandable than advanced academical papers. That was also the aim of this thesis. Another advantage of this thesis is that it's writer – that is to say, I – is not a pure academic, but a student and a worker in the field of accounting. I have tried to explain the concepts and definitions so that they would be understandable also in a mangerial or practicioner perspective. The figures in the theoretical review were merely developed to simplify the complex picture. I hope the reader experiences it that way. As the American author Natalie Babbit has stated:

"*Like all magnificent things, it's very simple*".

On a company-level, my thesis should help the stakeholders of companies to understand what the number of the company's different institutional blockholders can mean. The interests of the stakeholders differ significantly as the state wants to collect taxes, the public (e.g. regular people or jounalists) wants the firm to pay its taxes fairly, the management of the firm wants to do tax planning in a way that maximizes their incentives, the shareholders want to maximize the value of the company, and so forth. The different stakeholders could understand each other better if they saw the meaning of the number of institutional blockholders. For instance, the state and the jurisdiction could monitor firms differently based on the number of the firm's institutional blockholders, or the boards of the companies could design incentives for the firm's institutional shareholders to monitor and bring knowledge to the company. The latter idea is somehow supported by the study of McGuire et al. (2014) who find that that dual-class stocks differ from

other companies when it comes to tax avoidance. Even that the result shows that such dual-class stocks engage in less tax avoidance, with some stock design, the reverse – effective tax planning – could be possible.

7.4. Suggestions for future research

The results of this thesis have raised many interesting and important subjects for further research. First and foremost, it would be good to understand the specific ways by which the companies do effective tax planning. The field of tax avoidance research is rather active, but a major part of the researches has focused on studying large samples with quantitative methods. Qualitative studies with interviews and inquiries could offer new insight into the causes and effects, and give understanding to make better-designed quantitative studies. Specific research questions could be such as (1) how institutional shareholders use their knowledge to make the firms exhibit different levels of tax avoidance, (2) what are the ways of the firm's management to do effective tax planning and (3) how do the ways of tax planning differ in different situations.

Another interesting track could be to study the relation between conforming tax avoidance and some other fundamental accounting concepts. For instance, it would be appealing to know whether taking a big bath or cosmetic earnings management has something to do with conforming tax avoidance.

There is also still need for more research designs resembling this thesis, because of the contradictory results of both prior research and this thesis. It would not be a bad idea to replicate the research design of my thesis to some extent, but to include long-term tax avoidance measures to be able to control volatility of the measures, especially the volatility of the *CASH_ETR*. Another variation to the design could be to perform quantile regressions based on Armstrong et al. (2015), which could give more insight into the variation of the firms' tax avoidance. An example research question could be: do firms with less than forty different institutional owners engage in aggressive tax avoidance.

Furthermore, alternatives to ETRs, effective tax rates, would be welcome. ETRs are intuitive, easily understandable measures, but they have the drawback in short term: they can be used only for firms with positive pretax income. As discussed earlier in this thesis, excluding firms with

negative book income is an artificial choice, especially in the times of crisis when a greater part of the firms is not making profit.

Finally, a major part of the prior research, as well as this thesis, focuses on institutional investors as a group. Even if there has been papers about a specific group of institutional investors (e.g. Chen et al. 2015), they have compared that specific group of institutional investors to the rest of the companies. None has yet performed any wider comparative studies to my knowledge. That kind of study design could compare, for instance, tax avoidance of firms owned by pension funds, insurance companies, mutual funds and hedge funds, or divide institutions based on their past trading behavior similarly to Bushee (1998).

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APPENDIX 1. Panel A. All variable definitions.

ADVEX	Advertisement expenditure (XADV) divided by net sales (SALE)	XAD / SALE
BTD	Book-tax differences; Book income (PI) less taxable income [(TXFED+TXFO)/STR - ΔNOL]	PI - [(TXFED+TXFO) / STR - ΔNOL]
*BTD*NEG*	BTD multiplied by NEG	BTD * NEG
CASH_ETR	Firm's cash effective tax rate, which equals cash taxes paid (TXPD) divided by pretax net income (PI). *CASH_ETR* is set to missing when the denominator is zero or negative. *CASH_ETR* is winsorized to the range [0, 1].	TXPD / PI
CASH_HOLD	Cash and short-term investments (CHE) scaled by total assets (AT)	CHE / AT
CAPEX	Capital expenditure (CAPX) divided by net sales (SALE)	CAPX / SALE
CONFORM_TAX	The residual from equation TAXESPAID_TO_ASSETS	ε
Δ*NOL*	Change in the firm's net operating loss carryforwards (TLCF) available at the beginning of year t divided by total assets at the beginning of the year t	$(TLCF_{t-1} - TLCF_{t-2}) / At_{t-1}$
Δ*SALES*	Sales (SALE) divided by sales of the previous year ($SALE_{t-1}$) minus one.	$SALE_t / SALE_{t-1} - 1$
EQINC_dum	An indicator if the firm has equity income in earnings (ESUB)	
FORINC_dum	An indicator if the firm has a non-zero, non-missing value for pre-tax income from foreign operations (PIFO)	
GAAP_ETR	Firm's effective tax rate, which equals total tax expense (TXT) divided by pre-tax income (PI). *GAAP_ETR* is set to missing when the denominator is zero or negative. *GAAP_ETR* is winsorized to the range [0, 1].	TXT / PI
InstOwn	The average percentage of a firm's stock owned by institutional shareholders in year t	meanSHARES / (CSHO * 1,000,000)
InstOwnNumber_dum	An indicator if the firm's stock is owned by less than 40 different institutions	
INTANG	Intangible assets (INTAN) scaled by lagged assets (AT_{t-1})	$INTAN / AT_{t-1}$
LEV	Leverage; long-term debt scaled by lagged assets (AT_{t-1})	$DLTT / AT_{t-1}$
MP_BTD	[Domestic financial income (PIDOM) - domestic taxable income (TXFED/TXT) - state income taxes (TXS) - other income taxes (TXO) less equity in earnings (ESUB)] divided by lagged total assets (AT_{t-1})	(PIDOM - TXFED / STR - TXS - TXO - ESUB) / AT_{t-1}
NEG_dum	An indicator if the firm's book-tax difference is negative	
NOL_dum	An indicator if the firm has a non-zero, non-missing value for net operating loss carry forwards (TLCF) in the beginning of the year	
PI	Pretax income (PI) scaled by lagged assets (AT_{t-1})	PI / AT_{t-1}
PPE	Net property, plant and equipment (PPENT) scaled by lagged assets (AT_{t-1})	$PPENT / AT_{t-1}$
RDEX	Research and development expenditure (XRD) divided by net sales (SALE)	XRD / SALE
SALES_TO_NOA	Sales (SALE) at the end of year divided by net operating assets (SEQ-CHE+DLC+DLTT) at the end of year	SALE / (SEQ-CHE+DLC+DLTT)
SGAEX	Sales, general and administrative expenditure (XSGA) divided by net sales (SALE)	XSGA / SALE
SIZE	Natural logarithm of assets (AT)	ln(AT)
TAXES_PAIDTO_ASSETS	Firm's cash taxes paid (TXPD) divided by total assets at the beginning of year t.	$TXPD / AT_t$

APPENDIX 1. Panel B. All data items used in calculations.

From Compustat	Abbreviation	Description
x	AT	Assets - Total
x*	AT_lagged	Lagged Assets - Total
x	CAPX	Capital expenditure
x	CEQ	Common/Ordinary Equity - Total
x*	CEQ_lagged	Lagged Common/Ordinary Equity - Total
x	CHE	Cash and Short-Term Investments
x	CSHO	Common Shares Outstanding Million
x	DLC	Debt in Current Liabilities - Total
x	DLTT	Long-Term Debt - Total
x	ESUB	Equity in Earnings - Unconsolidated Subsidiaries
x	INTAN	Intangible Assets - Total
	meanSHARES	Number of shares owned by institutional investors, the year mean
x	PI	Pretax Income
x	PIDOM	Domestic Financial income
x	PIFO	Pretax Income - Foreign
x	PPENT	Property, Plant and Equipment - Total (Net)
x	PRCC_F	Price Close - Annual - Fiscal
x	SALE	Sales/Turnover (Net)
x	SEQ	Stockholders Equity - Parent
	STR	United States Statutory Tax Rate
x	STX	State Income Taxes
x	TLCF	Tax Loss Carry Forward
x*	TLCF_lagged	Lagged Tax Loss Carry Forward
x	TXDI	Income Taxes - Deferred
x	TXFED	Income Taxes - Federal
x	TXFO	Income Taxes - Foreign
x	TXO	Income Taxes - Other
x	TXPD	Income Taxes Paid
x	TXS	Income Taxes - State
x	TXT	Income Taxes - Total
x	XAD	Advertisement expenditure
x	XI	Extraordinary Items
x	XRD	Research and development expenditure
x	XSGA	Sales, general and administrative expenditure

* Lagged measure of the Compustat data item, not straightly downloadable

APPENDIX 2. Result comparison of *BTD* and *MP_BTD*.

	BTD	*MP_BTD*
Intercept	0.038	0.023
	(1.950)	(1.059)
InstOwn	-0.017	0.002
	-(3.963)	(0.569)
InstOwnNumber_dum	0.003	0.003
	(0.915)	(0.964)
PI	0.427	0.093
	(59.060)	**(10.628)**
LEV	0.026	-0.005
	(6.155)	-(1.091)
NOL_dum	0.013	0.009
	(7.351)	**(5.360)**
SIZE	-0.004	-0.003
	-(6.448)	**-(4.079)**
ΔSALES	0.005	0.005
	(2.357)	**(2.261)**
CASH_HOLD	-0.027	-0.005
	-(4.064)	-(0.794)
PPE	0.018	0.009
	(4.141)	(1.312)
INTANG	-0.014	-0.003
	-(3.401)	-(0.779)
EQINC_dum	0.007	0.001
	(3.599)	(0.319)
FORINC_dum	-0.004	-0.019
	-(1.855)	**-(5.386)**
CAPEX	-0.011	0.015
	-(2.333)	(0.672)
ADV	0.053	0.055
	(1.878)	**(2.294)**
RD	0.231	0.059
	(16.860)	**(3.850)**
SGA	-0.024	-0.019
	-(3.749)	**-(3.014)**
Adjusted R2	40.36 %	7.24 %
Observations	6,686	3,742